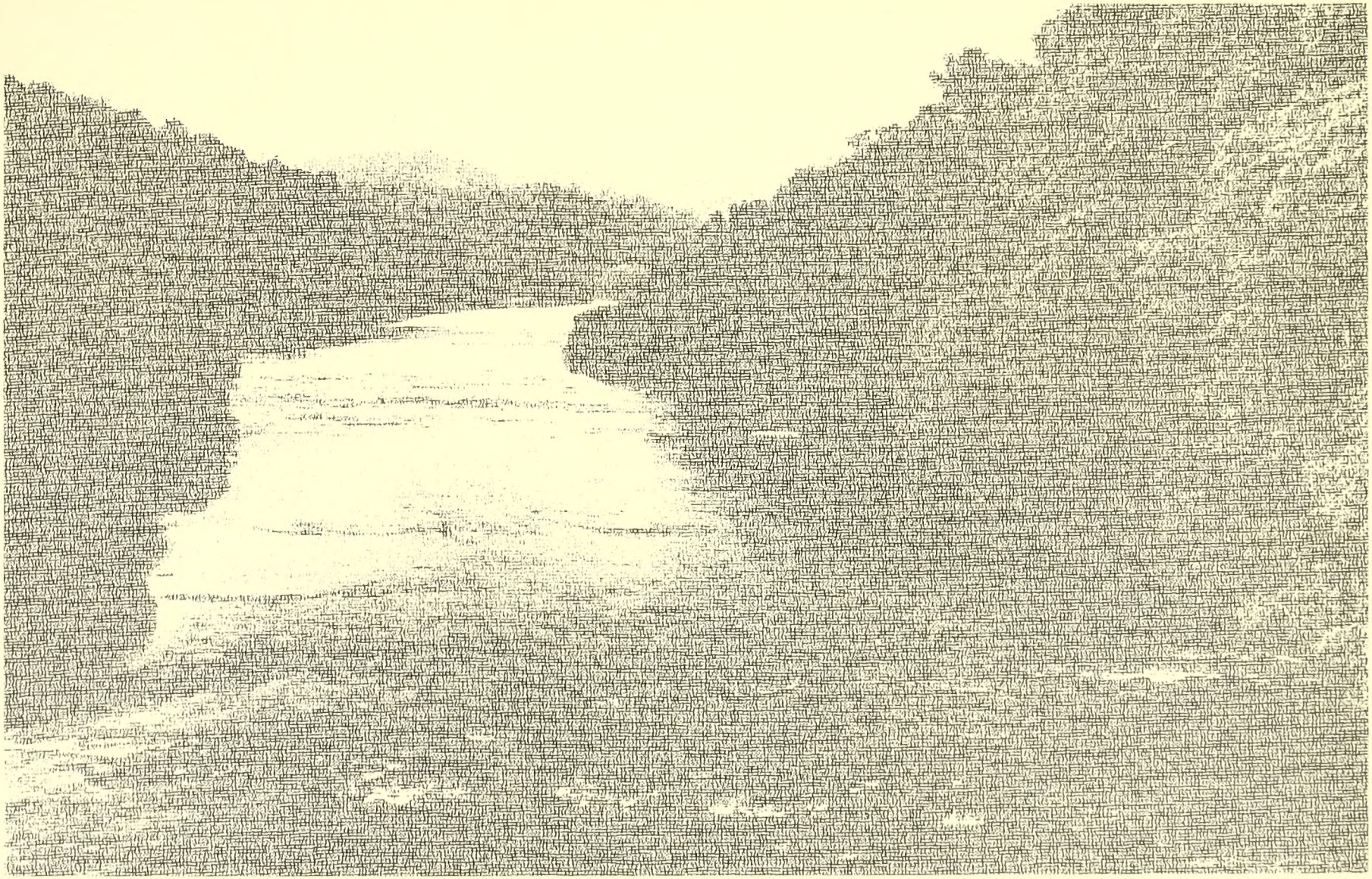
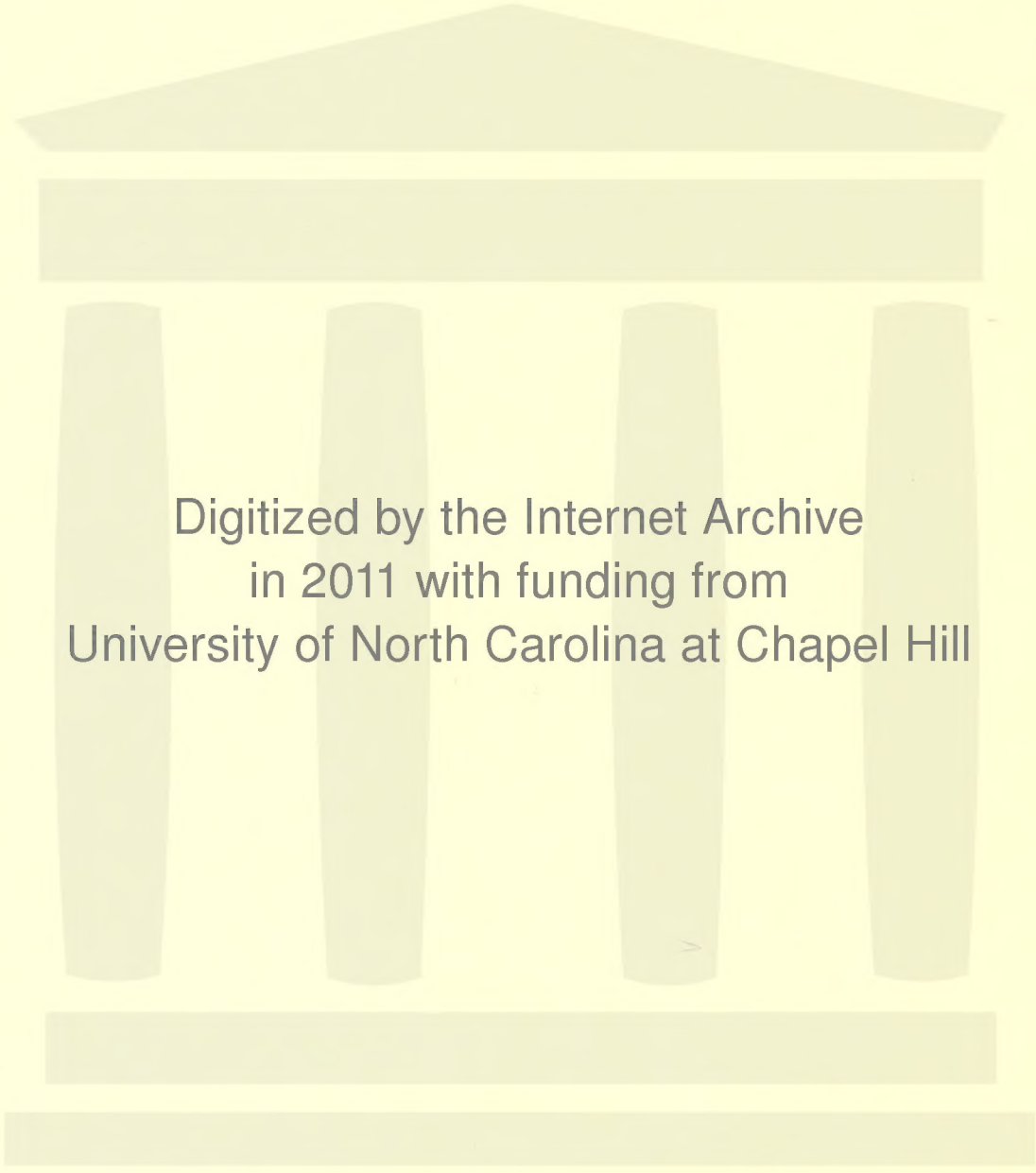
carolina planning

vol. 2 no.1, winter 1976





Digitized by the Internet Archive
in 2011 with funding from
University of North Carolina at Chapel Hill

http://www.archive.org/details/carolinaplanning21univ

staff

editor — marilyn sandorf
managing editor — craig richardson

editorial board
faculty members — gorman gilbert, david godschalk, george hemmens
student members — steve ademeluyi, daniel fleishman, john manuel

Special thanks to Dana Bailey and Mary Aufmuth of the School of Design, North Carolina State University, for their work in the design of this issue.

Carolina Planning welcomes comments and suggestions on the articles published and will be happy to accept new material for future editions from interested persons. Such material should be submitted to the Editor typed, double spaced, at a maximum of 15 pages. Additional copies of the journal are available on request from the Department of City and Regional Planning for a $1.00 prepaid handling charge.

Copyright © by the Department of City and Regional Planning.

table of contents

showdown on the new river
john s. manuel
4

The debate over licensing of the Blue Ridge Power Project with its irresolvable conflict between environmental interests and energy needs is analyzed in a benefit-cost framework. The reader is brought face-to-face with the issue of the New River controversy which, at this writing, is still pending before the U.S. Circuit Court of Appeal's.

the taxicab: neglected form of public transportation
fred fravel, robert bach, frank diiorio
9

Long ignored by transportation planners and city officials, the taxi is beginning to emerge as an important means of providing low-cost, demand-responsive transportation service to the poor, elderly and handicapped. The results of the North Carolina taxi study are presented here, along with policy and program recommendations that grew out of the study.

state land policy: new directions in planning?
william swindaman
16

A member of the North Carolina land policy staff describes the current status of the State Land Policy and State Land Classification System. The role of the land classification system with its local designation of state-determined land classes is explained, along with the concept of "greater than local concern." A method to coordinate existing public programs related to land use is also discussed.

a rejoinder: questions on north carolina land policy
david godschalk
23

A planning professor at the University of North Carolina scrutinizes the draft North Carolina State Land Policy and raises some questions concerning its content and organization. Key issues focus on the multiple approach taken, balance between local, regional and state governments during the planning, implementation and regulatory phases, administrative feasibility, regional welfare and fiscal realities.

is there an alternative to the nursing home for north carolina's elderly?
lynne eickholt cooper
26

The present system of institutionalized long term care for the elderly is examined in light of recent research on the needs of the elderly and the effects of institutionalized care. The article presents the costs and benefits of long term care and two alternatives — home health care and geriatric day care — and recommends a shift of emphasis from long-term care to geriatric day care.

areawide water quality: the 208 planning experience
david h. moreau
35

Section 208, or areawide water quality planning, is just beginning across the nation. Within, the author relates his perception of 208 after developing the work program for the areawide project at the Research Triangle of North Carolina — the first area in the United States designated under the act.

introduction

The second issue of *Carolina Planning* comes to you with a new look. This new format is in response to the design feedback that we have received from our readers. To facilitate feedback on the content as well as the design of our publication we have enclosed a postcard questionnaire in this issue. This questionnaire is intended to provide a quick, simple means for you to communicate your impressions of this publication and your needs for planning information to the editors of *Carolina Planning* . We urge you to give a few minutes of your time to help *Carolina Planning* meet its objective: determining and meeting your needs and those of others in the field of public planning in North Carolina.

Carolina Planning is published under grants from the Z. Smith Reynolds Foundation of Winston-Salem, North Carolina, and the John Parker Trust Fund, Department of City and Regional Planning. This funding enables us to provide the first four issues of this publication to you without charge. However, *Carolina Planning* must soon become self-sustaining or find another source of funding. In our postcard questionnaire we are asking you and/or your organization to indicate your willingness to subscribe to *Carolina Planning* in the near future. Let us hear from you.

I am grateful for the cooperation and support given by George Hemmens, chairman of the Department of City and Regional Planning, and the Editorial Board, faculty members Gorman Gilbert and David Godschalk, and student members Goke Ademeluyi, Dan Fleishman and John Manuel. To Craig Richardson I would like to say thank you, for all your work.

Carolina Planning is designed to discuss planning problems and issues in the State of North Carolina with an emphasis on public policy rather than methodologies and theories of planning. Objectives of the publication are:

(1) To provide a forum for the discussion of planning problems, issues and techniques related to the practice of planning in North Carolina;

(2) To enhance the awareness public officials have about planning in North Carolina and elsewhere; and

(3) To provide for the exchange of planning information between the Department of City and Regional Planning and other governmental and academic institutions in the state and nation.

Students from the Department of City and Regional Planning are the primary contributors to *Carolina Planning* ; however, contributions from other sources such as the faculty of the Department of City and Regional Planning, professional planners, public officials and students and faculty from other academic institutions in the state are encouraged.

showdown at the new river

We have witnessed the struggle many times before - at Hell's Canyon, Glen Canyon, the Grand Canyon . . . and on hundreds of smaller rivers throughout the country. The power companies want another hydroproject. Across the state and in the nation's capital, where the fate of the river will ultimately be decided, people who have never seen the New River and, perhaps, never even heard of it before last year, are taking sides on the issue. When the House Rules Committee refused to consider a bill to study the New River for inclusion in the National Scenic Rivers System, ABC commentator Harry Reasoner felt moved to criticize the Committee on national television, even though he admitted to never having heard of the river before the bill was brought up. Why? Because it is an issue with both practical and emotional overtones. To many people, the sight of an unspoiled free-flowing river can never compare to that of a man-made reservoir. And to dam such a river is to spit in the face of Nature - to sever one of her most precious arteries.

The New River is formed on the Ashe-Alleghany County line in Western North Carolina

North Carolina Travel Development Photo

The Appalachian Power Company does not see it that way. What they see is an 8.5 percent increase per year in electrical demand and no way to meet it without constructing a major new facility. Engineers pore over maps, and the site is chosen - the upper New River at the border of Virginia and North Carolina. The project is dubbed "Blue Ridge." Unfortunately, while the upper New River proves to be a perfect location for a hydroproject, it is also one of the more scenic and unpolluted major rivers in the eastern United States. Environmentalists and area residents recognize this, and the battle begins. It has been going on now for over ten years.

Curiously, the fate of the $430 million Blue Ridge Power Project now hinges largely on the U.S. Circuit Court of Appeal's determination as to whether or not the Federal Power Commission's licensing review gave proper consideration to the discovery of Indian artifacts in the area proposed for inundation. Should the court decide in FPC's favor, the last legal hurdle may have been cleared. More than likely, however, the battle will drag on into the future. The reason for the protracted struggle is this: at stake are some 40,000 acres of rural Virginia and North Carolina countryside, 76 miles of the scenic upper New River, and the homes and farms of over 1,175 people. The lives of hundreds of others will be affected by the project as well. Needless to say, the consequences of Blue Ridge are considerable, and for this reason its feasibility and desirability must be conclusively established.

The debate over the licensing of Blue Ridge is a classic of our time. Environmental objectives, predominant in public thinking through the late sixties and early seventies, appear to be losing out to the now more urgent demands for energy supply. Often forgotten in the controversy, however, is the fact that the Blue Ridge Project will *not* be a producer of energy. On the contrary, it is a pumped-storage facility which will consume 4 units of energy for every 3 units it makes available. Basically, pumped storage facilities are designed to provide power only during peak demand periods, those times of the day when the need for electricity exceeds the normal generating capacity of the utility system. During normal consumption periods, water must be pumped back into the project's upper reservoir for use during the next peak demand

---

John Manuel is a second year student concentrating in environmental and land use planning at the Department of City and Regional Planning, University of North Carolina, Chapel Hill. Before entering UNC he worked for Ralph Nader and later the Ohio Conservation Foundation. He has published articles in Environmental Action *and* Outdoor America.

period. This means that more energy is consumed in operating the facility than it produces. But lest consumers be forced to alter their patterns of power consumption (i.e., use electrical power during off-peak hours), the demand for additional electricity during peak load periods must be met.

Often forgotten . . . is the fact that the Blue Ridge Project will not be a producer of energy. On the contrary, it . . . will consume 4 units of energy for every 3 units it makes available.

project benefits and costs*

Over its 50 year licensing period, the Blue Ridge Power Project is expected to generate $6 million per year in net benefits. Most of this will come from the project's power production functions. Blue Ridge will provide 2.4 billion kilowatt hours of electricity per year to Appalachian and American Electric Power consumers (of which the former is a subsidiary) in Virginia, West Virginia, Kentucky, Tennessee, Ohio, Indiana, and Michigan. North Carolina will receive *no* power benefits from the project, and for this and other reasons, it is opposed to Blue Ridge.

Recreation is a second objective of Blue Ridge, but not the least significant. According to Appalachian Power Company, the Blue Ridge project "is the key that will unlock the vast recreational potential of this underdeveloped Appalachian region."[1] The project will create two reservoirs having a total shoreline of over 700 miles and a combined surface area of about 40,000 acres. The project's reservoirs, in turn, will create 31 islands which will have a combined size of about 475 acres and a total shoreline of about 24 miles. Recreation will be largely confined to the upper reservoir as the lower reservoir will be used for flood control storage. Water levels in the lower reservoir may be varied as much as 15 feet with efforts to control downstream flooding, and these fluctuaions will severely limit the latter's recreational potential.

To enhance the project's recreational potential, Appalachian plans to spend $3 million for two state parks on the upper reservoir. One million dollars will be devoted to the purchase of land for a 2,400 acre Virginia state park and another million for a 3,900 acre state park in North Carolina. The company will develop, own, and operate overlook and picnic facilities at both campsites and public fishing areas on each bank below the lower dam. It will acquire land for some 32 points of public access to the project's reservoirs and will provide canoe portages around both dams. In addition, all 31 of the project islands will be acquired by Appalachian and made available to boaters.

Blue Ridge will confer significant benefits in terms of flood control. Under existing conditions, it is estimated that the project will prevent flood damages averaging $91,000 per year over its 50 year lifespan. Current plans call for the transference of the flood control storage from the downstream Bluestone Reservoir in West Virginia, to Blue Ridge. This would allow the federal government greater flexibility at that site, primarily for recreation.

Both Appalachian Power Company and the Federal Power Commission contend that Blue Ridge will open the mountain area to economic diversification and growth. Over its 5-9 year construction period, the project will employ 1,500 workers, half of them recruited locally. The total job payroll is expected to run close to $80 million. American Electric Power Company Vice President Joseph Dowd claims, "Blue Ridge will make possible the economic diversity which . . . this underdeveloped region needs so badly. Recreation-related economic benefits will be substantial."[2] FPC predicts that the towns of Galax and Independence, Virginia, and Sparta, North Carolina, will likely become resort centers. Long term population growth "will be accelerated by the presence of the new reservoirs and their public use facilities."[3]

The State of North Carolina and numerous environmental groups disagree with these contentions. The American Rivers Conservation Council, for one, is skeptical about the economic benefits of a reservoir in this area. They point to the failure of a supposed economic boom to materialize in the case of a nearby TVA reservoir built decades ago in an area with a similar economic fabric to the New River Valley (Lake Norris, Tennessee). North Carolina questions the value of another one-season recreational employer in the mountain area. Both Ashe and Allegheny Counties have seasonal employment in the recreational sector and future development of this sector, they feel, "cannot be relied on to establish a strong economic base."[4] North Carolina also has mixed feelings about the short-term job opportunities provided by Blue Ridge. The start of construction will bring a sudden influx of workers and their families into this sparsely-populated region, putting high demands on area services such as housing, schooling, police and fire, health facilities, marketing, entertainment, recreation and transportation. Once construction is over, most of these workers and their families can be expected to leave.

More significant than the accommodation of a temporary work force is the massive dislocation of families and farms that will result if Blue Ridge is built. Some 580 families in North Carolina and Virginia will have to abandon their homes and occupations because of the impounded waters. The total number of families that will sacrifice at least some of

*Unless otherwise indicated, all figures on Blue Ridge are taken from the Federal Power Commission's Final Environmental Impact Statement on Blue Ridge.

their property is estimated to be as high as 1,500. Hardship will be created in other ways as, for example, the resident who may have to send his child on a round trip of nearly 80 miles to reach a school on the other side of the reservoir. Blue Ridge's reservoirs will inundate some 40,000 acres of land, 29,000 acres of which are either under active cultivation or pasture. Several thousand more acres will be rendered inaccessible by the waters of the lakes. The Agricultural Stabilization and Conservation offices for the three affected counties (Ashe County and Allegheny County, North Carolina, and Grayson County, Virginia) estimate an annual loss in agricultural production of $13.5 million if the dams are built.

Since the passage of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, all federal and federally-assisted projects, in addition to paying for the land and land rights of displaced residences and businesses, must cover such additional costs as moving expenses, expenses incurred in locating a new residence or business, and cost differences in rent or purchase of a comparable dwelling to the one abandoned. The Act also requires provision of a relocation assistance advisory program for displaced persons. In its impact satement on Blue Ridge, FPC has stated that Appalachian would fund up to one-half the cost of a Relocation Housing Needs study for Ashe and Allegheny Counties. They also contend that Appalachian should be required to establish a relocation advisory service and provide "reasonable financial assistance for relocation services."

More significant . . . is the massive dislocation of families and farms that will result if Blue Ridge is built.

Both Ashe and Allegheny Counties have prepared "Housing Element Update" studies indicating current shortages in available housing. The studies conclude that relocation problems caused by the Blue Ridge Project would create additional and severe demands on existing inadequate housing supply. Ashe County will have to provide 224 families with housing and Allegheny County will have to provide housing for 70 families. A "Residential Relocation" study prepared for Ashe County concluded that,

> At best, the relocation of families from the Blue Ridge Reservoir area will be a difficult process because of the large number of people affected in the three-county area, their dispersed pattern, the attitudes and independent nature of the people and the general lack of experience in dealing with relocation in a project of this type and scope. It is essential that a well-planned and organized system be developed for delivering relocation assistance in a completely fair and equitable manner.[5]

The study goes on to criticize the slight attention paid to relocation problems in the draft environmental impact statement on Blue Ridge and calls for specific definition of the functions of the "relocation advisory service" recommended by the Federal Power Commission. The study also recommends that Appalachian Power Company be required to comply with the Uniform Relocation Assistance Act.

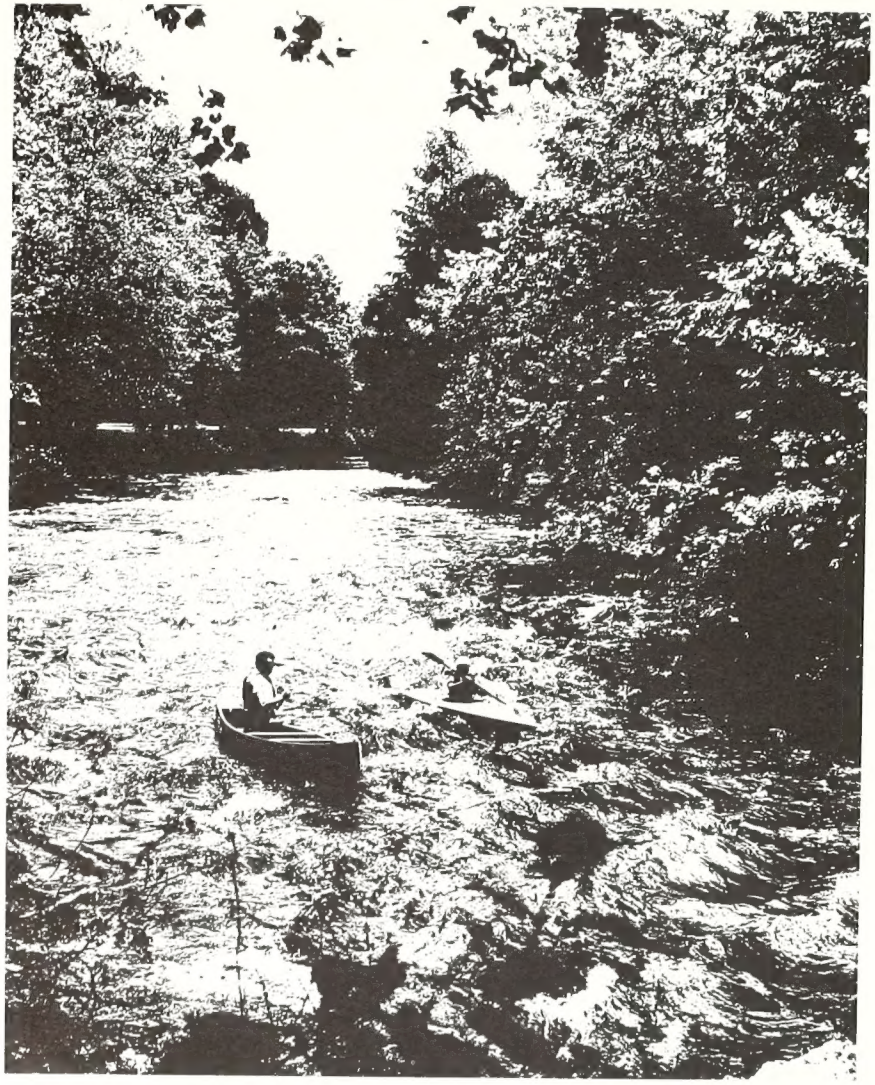
the new river

While the economic and social consequences of Blue Ridge are certainly important, North Carolina's primary reason for opposing the project is that it would eliminate over 70 miles of the beautiful New River. The main river and its major branches, the North and South Forks, offer what the North Carolina Department of Natural and Economic Resources rank as the best and biggest smallmouth bass fishery in the state. In addition, several of the tributaries to be destroyed by the dams support populations of native trout.

The upper New River is one of the few remaining major unpolluted rivers in the eastern United States. It provides relatively easy whitewater canoeing year-round amidst a beautiful setting of wooded hills and mountains. The New River is important from a zoological standpoint as it supports a wide variety of minnows and mollusks, several of which are considered rare and endangered species. Their habitats might be seriously threatened by the construction of Blue Ridge. The name "New River" is a curious misnomer as the stream is very likely the oldest in the United States. It was once part of the mighty Teays River which drained the central part of the continent. The New River Valley appears to have been a major trade route for Indian tribes over the centuries, as witnessed by the findings of several archeological expeditions commissioned by Appalachian Power Company. According to the two anthropologists who conducted the studies, hundreds of arrowheads, pieces of pottery, and assorted other artifacts were recovered from 42 sites over a two week period. It was their recommendation that up to two years excavation and salvage be undertaken prior to construction of the dams. Curiously, the Federal Power Commission made no mention of the anthropologists' findings or recommendations in their environmental impact statement on Blue Ridge. The State of North Carolina has subsequently sued FPC for violation of the National Environmental Policy Act which requires all federal agencies to help "preserve important historic, cultural, and natural aspects of our national heritage."[6] FPC claims that Appalachian failed to supply them with any information concerning the archeological studies. No decision has yet been reached in the case.

North Carolina's main effort to preserve the New River calls for designation of the threatened section as a National Scenic River.

Toward this end, the U.S. Senate last year introduced S. 2439, a bill which would have delayed licensing of Blue Ridge for two years in order to give the Department of Interior time to determine if the river meets the qualifications of the Wild and Scenic Rivers Act. After this period, Congress would decide whether the river should be kept in its present state or impounded for power storage.



The upper New River is one of the few remaining major unpolluted rivers in the eastern United States. It provides relatively easy whitewater canoeing year-round amidst a beautiful setting of wooded hills and mountains.

North Carolina Travel Development Photo

S. 2439 failed to get beyond the Rules Committee last year and is not likely to be considered again in time to stop Blue Ridge. The State of North Carolina recently passed a bill incorporating 26 miles of the New River into its own Natural and Scenic Rivers program, however, inclusion of the upper New River in the North Carolina system does not prevent Appalachian from building the dams in Virginia. It is hoped that by demonstrating a strong desire to preserve the river on a state level, the federal government will reconsider the New River for inclusion in the national system. Should the river be designated as such, Appalachian would have to abandon its plans for Blue Ridge.

alternatives

In its testimony before Congress and the Federal Power Commission, Appalachian Power Company has demonstrated a rapidly growing demand for power throughout its service area (8.5 percent per year). Drawing from this and other resources, FPC states,

> The need for power is expected to become vastly greater in the upcoming years, and it is certain to become acute well before the Blue Ridge Project is constructed and producing energy. . . . Even if all U.S. consumers were to adopt stringent conservation practices with respect to electricity, the demand for electric power would continue to increase to such an extent that all the production of Blue Ridge would be essential and, in fact, would meet only a small part of the foreseen future need.[7]

Thus, it appears that FPC's denial of a license to construct the Blue Ridge project would require Appalachian to develop other methods of meeting anticipated demand or face voltage shortages and brownouts during peak load demand periods. What, then, are the feasible alternatives to Blue Ridge?

The most economical alternative to the Blue Ridge project is generally considered to be a coal-fired steam-electric plant. Such a facility would cost an average of $3 million per year more to operate and amortize than Blue Ridge. As Blue Ridge's pumps must be powered by coal-burning plants down the line, both facilities would result in the burning of substantial amounts of coal. Blue Ridge, however, would consume 144,000 and 500,000 fewer tons of coal in 1980 and 1985 respectively than a coal-fired steam-electric plant. This could mean that a coal-fired plant would result in more air pollution; however, the level of contaminants released into the air will vary with the sulfur and flyash content of the coal being used and the degree of emission control employed at the generating plant. EPA has argued that it might be less polluting to build a new coal-fired facility equipped with the latest emission controls rather than pump energy into Blue Ridge from older, more polluting plants down the line.

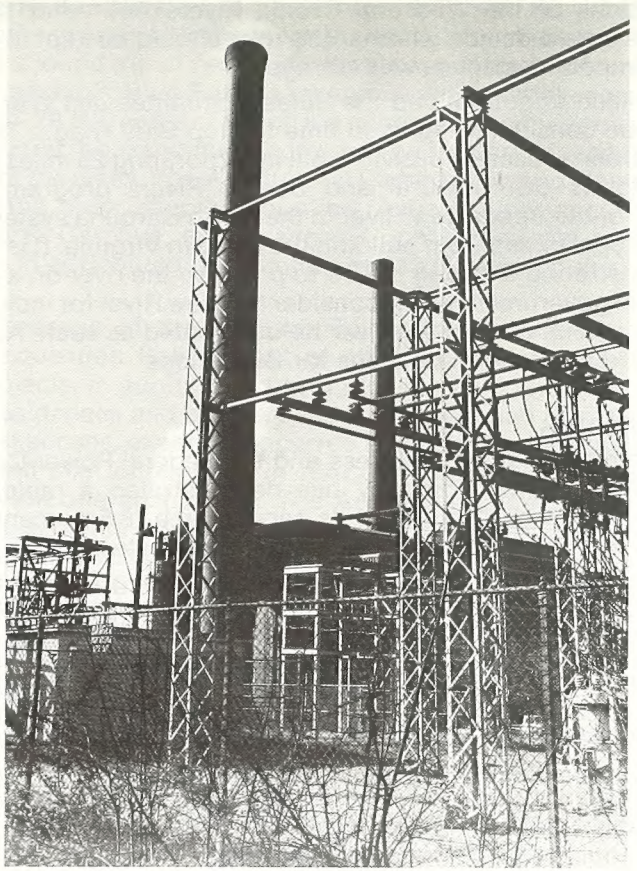


Photo by Fred Peace

Peak load pricing is considered by many to be the best and most equitable means of lowering peak demand.

Other alternatives including light oil or natural gas fired turbine plants, nuclear plants, pure pumped-storage, and conventional hydroelectric plants have also been considered by FPC. All were discarded, however, based on technological, economical, or environmental grounds. One alternative not considered by FPC is the use of peak load pricing to even out the demand which Blue Ridge is designed to meet. For years, many economists and environmentalists have been suggesting that it would be best to discourage the use of electricity during the peak demand periods (those times when electrical demand is at its highest). They feel that reduced peak demands would benefit the consumer as the overall cost of delivering electricity would be reduced due to increased efficiency of the utility system. The environment would benefit, as well, because of the reduced need for new facilities.

Peak load pricing is considered by many to be the best and most equitable means of lowering peak demand. Under this system, the highest rates would be charged for electricity used during the peak demand periods, when it is most expensive to produce. Peak pricing would encourage consumers to shift their consumption patterns to take advantage of the lower rates during the off-peak hours. This would level out the demand on the utility system, resulting in a more even use of the company's generating facilities and lower operating costs. One must consider, however, whether most consumers, especially in commerce and industry, could afford to alter their operating hours without serious negative consequences.

conclusion

The New River controversy presents a difficult problem to planners and public decision-makers alike. Are regional and national objectives best served by preserving the New River as a free-flowing system or impounding its waters for power supply? Environmentalists have been quick to oppose the Blue Ridge project based on its environmental drawbacks. However, Appalachian appears to have a very real need for additional power — a need which the public cannot ignore. One must decide what alternatives are available and whether their additional costs are worth the saving of 76 miles of the upper New River. Comparison of costs and benefits, while clarifying the issue somewhat, does not make the decision clear-cut. Despite efforts to the contrary, the scenic and ecological value of rivers like the New is impossible to quantify. Such rivers are a unique and constantly dwindling resource. Once lost, they can never be replaced. In the end, it is a question of which values — environmental protection or energy production — will prevail.

Footnotes

[1]U.S. Senate, Committee on Public Works, *Hearing on the Blue Ridge Hydroelectric Power Project*, Washington, D.C.: U.S. Government Printing Office, 1970, p. 20.

[2]*Ibid.*, p. 26.

[3]Federal Power Commission, *Final Environmental Impact Statement, Modified Blue Ridge Project No. 2317—North Carolina/Virginia*, June, 1973, p. 49.

[4]*Memorandum*, on the Draft Environmental Impact Statement, Modified Blue Ridge Project No. 2317, Prepared by Art Cooper, North Carolina Department of Natural and Economic Resources, Raleigh, N.C. March 20, 1973, p. 4.

[5]*Ibid.*, p. 7.

[6]"Edminsten to Use Arrowheads in Fight Against New River Dam," *Greensboro Daily News*, September 3, 1975.

[7]Federal Power Commission, *op. cit.*, p. 73.

the taxicab: neglected form of public transportation

Until recently, the taxicab has been largely ignored by transportation planners as an important mode of urban public transportation. A comparison of the taxi industry with the other modes of urban public transport shows that in 1970 taxicabs produced more revenue than bus and rail operations together, carried more passengers than the rapid rail and over half as many as buses. Taxicabs traveled more than twice as many vehicle miles as buses and rapid rail combined, and did this all without benefit of public subsidy.[1] In many small and medium-sized cities the taxicab is the only form of public transportation. In North Carolina, all of the forty-two cities with populations greater than 10,000 have taxicab service, while only thirteen of these cities have bus service.[2]

There are at least three important reasons why transportation planners and city officials should be interested in taxis. First, the demand-responsive, flexible nature of taxi service makes it an ideal means of providing mobility for those who cannot or do not drive or who lack the use of an automobile. Second, the taxi provides low-cost service that makes it an attractive alternative to deficit-plagued bus systems. Third, as of October, 1975, taxis are eligible for federal subsidies through the 1974 National Mass Transportation Assistance Act, under the same conditions as privately-owned transit operations.[3]

However, it is difficult to know how to utilize taxis more effectively as a transit service. There have been many proposals to adapt traditional taxi operations to changing needs, such as shared-ride, jitneys, and the deregulation of taxicab operation; but knowledge about who uses taxis, what kinds of trips they make and how current regulatory policy affects these users is necessary before informed public decisions can be made regarding the taxicab industry.

The purpose of this article is to show that taxis can be better utilized in small cities as a supplement or replacement for bus transit. Small city taxi users will first be contrasted with those in large cities both in the characteristics of the two groups and in their different trip purposes. The remainder of the paper will provide background on how taxis function in small cities and discuss proposals for better utilization of taxis in light of small city conditions.

who uses taxis

Studies of taxicab users[4] in the large cities of the northeast and midwest generally portray the taxicab user as a white woman, age 20-60, who does not work. These studies have shown taxi users to be either of a high or low income group, with relatively few middle income users. Taxi use is positively correlated with auto ownership, mainly for non-work trips, with residential destinations predominating. Travel connections, such as trips to and from airports, are a significant proportion of all trips. According to this image taxicab users have a choice of transportation modes, with either the private auto or other forms of mass transit available. Such information has tended to support the image of the taxi providing a luxury service to downtown business executives and upper-class suburban housewives, with occasional service to low-income, transit-dependent persons, who are unable, for some reason, to use bus or rapid rail transit for that particular trip.

Recent research by the Center for Urban and Regional Studies at the University of North Carolina provides a very different picture of the taxicab user.[5] This research was conducted in eight small and medium-sized North Carolina cities, rather than in the large urban areas of the northeast and midwest. Biases towards the literate and those prone to respond to surveys were eliminated by employing interviewers to ride in the taxicabs and collect the data. Results of the study reveal that small city taxi users are surprisingly poor, predominantly female, and largely black. Conversely, the large number of high-income taxi users found in the large cities is almost completely absent.

Fred Fravel is a second-year student in the Department of City and Regional Planning at the University of North Carolina, Chapel Hill, concentrating in transportation planning and regional development. Before entering graduate school he worked in the U.S. Department of Transportation in Washington, D.C., and with the City of Durham, N.C., as a planning intern.

Robert Bach is a second-year student in the Department of City and Regional Planning, University of North Carolina, Chapel Hill. He received his Bachelor of Architecture from the University of Illinois.

Frank Dilorio is a second-year student working toward masters degrees in City and Regional Planning and Geography at the University of North Carolina, Chapel Hill. He received his undergraduate degree from the University of Pennsylvania.

The taxi-using population described by the North Carolina study is 64 percent female, 63 percent black, and 12 percent handicapped (See figure 1). This group is comprised mostly of local residents, only 17 percent identifying themselves as being from out-of-town. The majority of the taxi users, 53 percent, are employed; twelve percent are unemployed, with the remainder being retired, housewives, or students. Of those employed, 69 percent are service workers, operatives, laborers, or domestics. The annual family incomes they report reflect the large proportion of unskilled workers using taxis in small cities. Thirty-three percent of the taxi users have annual family incomes of less than $3,000, as compared to 11 percent of all the families in the sample cities. More than half of the riders in the small cities have incomes less than $5,000, though only 25 percent of the families in those cities are part of that income group. The low-income nature of taxi users in these cities is further demonstrated by the early-month ridership peaks that occur after social security and welfare checks are received. Only 17 percent of the small city taxi users have annual family incomes over $10,000. The taxi is used in small cities primarily for shopping, work, and social trips. (See figure 1).

A major difference between large and small cities is the absence of alternatives for the taxi using population in the small cities. Not only do most small town taxi users lack the use of a private automobile, they may even lack a driver's license. Mass transit, even in the cities where it is available, is rarely used by the taxi riders. In fact only about 20 percent of the taxi users *ever* use transit. The small city taxi user is clearly "taxi-dependent."

The North Carolina small city taxi user is clearly "taxi-dependent."

Photo by Fred Peace

TAXI USER CHARACTERISTICS STUDY

FIGURE 1, SURVEY RESULTS FOR SELECTED QUESTIONS

Trip Characteristics

1) Location of pickup:

Downtown:	39.6%
Elsewhere:	60.4%

2) Location of delivery:

Downtown:	37.6%
Elsewhere:	62.4%

3) Number of passengers/trip:

1:	71.5%
2 or more:	28.5%

4) Shared rides (trips having 2 or more passengers with different origins and destinations): 3.3%

Passenger Characteristics

5) Sex:

Male:	35.8%
Female:	64.2%

6) Race:

White:	37.4%
Non-white:	62.6%

7) Handicapped: 12.3%

8) Are you from out of town?

Yes:	17.3%
No:	82.6%

9) What is the purpose of your trip?

Shopping:	38.6%
Work:	19.6%
Social/recreational:	16.0%
Travel connections:	7.3%
Medical:	7.2%
School:	1.1%
Other:	10.2%

10) Would you use the taxicab more often if the fares were lower?

Yes:	70.8%
No:	29.1%

11) Would you use the taxicab more often if the fares were lower but you had to ride with strangers?

Yes:	60.0%
No:	40.0%

12) How many cars are owned by members of your household?

None:	58.2%
1 or more:	41.8%

13) Do you have a driver's license?

Yes:	26.0%
No:	74.0%

14) Was there a car available to you for this trip?

Yes:	20.0%
No:	80.0%

15) Are you:

Employed:	53.2%
Out of work:	12.2%
Retired:	14.6%
A housewife:	13.3%
A student:	6.7%

16) If you are employed, what type of work do you do?

Service worker:	29.1%
Operative:	16.8%
Laborer:	11.5%
Domestic worker:	11.2%
Craftsman:	8.4%
Professional/technical:	7.6%
Clerical:	5.7%
Sales:	4.4%

17) What is your yearly household income?

Less than $3,000:	33.0%
$3,000 to $4,999:	21.6%
$5,000 to $7,499:	18.2%
$7,500 to $9,999:	10.6%
$10,000 and over:	16.6%

public policy

In most states, including North Carolina,[6] state enabling legislation delegates the authority to regulate taxicabs to the local government, and taxicab ordinances are a part of most city codes. Regulations typically fall into four categories—market entry controls, operating standards, fare regulations, and requirements for financial responsibility.

The relationship between operating procedures, fares and controls over entry into the taxicab business has been the focus of public policy concerns in many large cities. It has been suggested that the combination of regulations restricting the sharing of taxis, municipally-set meter fares and restrictions on the number of taxicabs licensed to operate has had the effect of reducing the mobility of the taxi-dependent population. It is argued that higher fares and reduced supply of taxicabs resulting from such a combination of regulations force taxi users to forego or postpone trips they would make if the price and supply of taxi service were determined in a competitive market rather than by a regulated private utility. The fare paid by taxicab users has also been affected by the lack of any federal policy regarding taxi regulation. While mass transit users have been subsidized by federal programs, resulting in lower fares and better service, taxi users have not received any subsidy, despite their dependence on the taxi for mobility. Public policy at all levels of government thus affects the mobility of those who depend on the taxi, as policy determines to a large extent the price and the supply of taxi service.

Typically these issues have been considered only in terms of the information provided by studies of taxicab operations and taxi users in large cities. The results of the North Carolina study present an opportunity to review the existing policies and proposed reforms as they affect the small town taxi user.

the taxi as a mode of public transportation

Planners at all levels of government, presently exclude the taxicab from consideration as a mode of public transportation, leaving regulation to municipal commissions and police departments. This policy is consistent with the evidence of past studies indicating that the taxicab is a luxury good. However, the results of the North Carolina study call this into question. The fact that small city taxi users have low incomes, use taxis for necessary trips, and lack alternative means of transportation is evidence that the taxi, as well as the bus and the subway, is an essential means of providing mobility to the transit dependent. In referring to cities of less than 250,000, the Urban Mass Transportation Administration has for several years held that "The primary object of projects in this population category is considered to be mobility for those totally dependent on transit..."[8] Given this objective the taxi should be included in national, state, and local transportation plans and programs as a mode of public transportation. The need for this change in policy was recognized by UMTA in its decision to make taxi operations eligible for federal assistance.[9] Taxi users may now benefit from the resources available through the Urban Mass Transit Administration-technical assistance, capital grants, and operating subsidies.

subsidization

Despite this recent change in policy the UMTA program has not been modified to reflect differences between the organization and delivery of taxi service and other forms of public transit—differences which could make it difficult for taxi operators to obtain federal funding.

In order to benefit from these programs, taxi operators must meet the same requirements as privately owned mass transit systems.[10] The types of assistance provided are the same as those given mass transit systems, with subsidies being paid to the firm in compensation for operating deficits. The many requirements that must be met by the operator in order to participate in this program make it likely that only the largest taxi operators in the larger cities will have the capability to respond to and benefit from this change in policy. The eight sample cities of the North Carolina study reveal a great variation in the degree of business sophistication found in taxi firms. Conditions vary from the one- or two-

cab firm, operating from an unpaved lot with an outdoor telephone and no business records, to the thirty- or forty-cab operation, operating from a central garage with radio dispatch and computerized record-keeping. Federal programs which depend upon the cab company to apply for assistance through the local unit of government could easily have the effect of excluding the small neighborhood firm from participation.

As the taxi industry does not present great economies of scale,[11] a subsidy program should be equally accessible to cab companies of different sizes. One way in which this could be accomplished is to provide the subsidy directly to the taxi user, perhaps by selling reduced fare tickets good for taxi rides to particular user groups. The tickets would be paid by the user to the driver in lieu of the cash fare. The difference between the full fare and the cost to the user of the tickets would be the subsidy. This type of system has worked well for El Cajon, California,[12] and is the basis for the statewide T.R.I.P. program in West Virginia.[13] It offers additional advantages in that the subsidy will go only to those users in the target groups, and that such a program can easily be set up and managed through existing delivery systems. The taxi industry would remain in private hands and would continue to enjoy the efficiencies resulting from the commission system of paying drivers.

The fact that many small North Carolina cities already subsidize some form of demand-responsive transportation is evidence that it is recognized as a public good meriting subsidization.

The fact that many small North Carolina cities already subsidize some form of demand-responsive transportation is evidence that it is recognized as a public good meriting subsidization. Public agencies providing subsidies to services that compete with the taxicab were found in several of the small North Carolina cities. Typically assistance is provided in the form of public support for vans or minibuses serving the elderly or other social service client groups. However, by providing the subsidy in the form of a public competitor to the private taxicab industry, these communities may inadvertantly cause taxi service to become scarce and more expensive. A more effective policy would provide the subsidy directly to the user for use in purchasing transportation. The subsidized user would benefit from improved service (such as decreased waiting times and night service) provided by the taxi; the non-subsidized user would benefit from the improved financial health of the taxi industry and its ability to maintain existing fares and dependable service. Public subsidies to another form of competition, the dial-a-ride bus (not found in any North Carolina city), should also be reconsidered in light of the ability of the taxi to provide substantially the same service at a much lower cost.

The small-cab firm is a commonplace sight in North Carolina.

Photo by Fred Peace

innovative modes of taxi operation

Changes in the regulations governing taxicab operation have been suggested as a method of reducing the cost of taxi service at little or no public expense. Altering these regulations to permit the implementation of innovative operational modes could permit or encourage the taxi operator to increase vehicle occupancy, resulting in reduced fares (or stable fares in the face of increasing costs). Each passenger would pay less, because the costs of the trip would be shared among several passengers. A survey of the literature reveals that there are three such innovative modes operating in a number of U.S. cities: shared ride, subscription service, and jitney service.

Shared ride involves the sharing of a taxi by persons not known to one another, but who have origins and destinations in relative proximity. A prospective passenger phones his origin, destination, and the number in his party to the taxi dispatcher. The dispatcher uses the two-way radio to

locate a vehicle close to the passenger's location that is heading in the same general direction of his destination, and the passenger is picked up. A passenger already in the vehicle will be diverted from a direct route to his destination, but will benefit from being able to split the fare. The shared ride mode in conjunction with the use of radio dispatching is sometimes referred to as dial-a-ride taxi, but shared riding may also be permitted in cities where cabs are hailed instead of called (Washington, D.C. is one example). Regulations in many cities have banned or discouraged shared riding by requiring the consent of the first passenger in the vehicle before additional passengers can be picked up (or by forbidding additional passengers unless the first passenger requests that they be picked up) and by requiring metered fares, which are difficult to allocate among several passengers. *Group ride,* in which several passengers with the same origin and destination share a cab and the fare, is also discouraged by laws requiring each passenger to pay the full fare. In the North Carolina study, seven of the eight cities surveyed allowed shared ride with the consent of the first passenger, and all but one permit group rides, as can be seen in Figure Two. However, only 3.3% of the trips surveyed were shared ride, possibly because firms make no effort to encourage it, and because of the requirements for the metered fare. By changing the regulation requiring the consent of the first passenger shared riding could be encouraged. Fare structure amendments would have to set a lower flat fare or a zoned fare structure for shared riding, with the possibility of retaining the meter for regular taxi service. Shared ride would also require that either a single dispatcher handle all shared ride requests, allocating them to the different firms, or that a franchise for shared-ride service be granted to one company (thereby increasing the chances that the service would be profitable). Cities in North Carolina currently have the authority to make these changes, thus implementing dial-a-ride taxi service at a very low cost to the taxpayer.

In the North Carolina study, seven of the eight cities surveyed allowed shared ride with the consent of the first passenger, and all but one permit group rides. . . .

The *subscription mode* is a second door-to-door service with potential cost savings over the conventional taxi mode. It is a pre-arranged dial-a-ride or shared ride taxi. The customer arranges with the company for transportation to and from a specific origin and destination at a specific time, usually on a repetitive basis. Having customers arrange such service well in advance enables the operator to match passengers having similar origins and destinations, making possible a fare reduction due to increased vehicle utilization. Subscription service is currently legal, and is in operation in many North Carolina cities. In practice, however, the passengers usually already know each other. Thus the consent of the first passenger, which is required, is not a problem, and neither is splitting the fare. Both of these regulations could present problems if the role of setting up the subscription service were taken by the firm or the city, since strangers might be placed in a cab together. The regulatory problems resulting in that case can be resolved in the same way that shared-riding is provided for in the regulations.

The *jitney* is the third mode that might be implemented through regulatory changes. Jitneys, as they operate in some cities, shuttle along relatively fixed routes on unscheduled, though frequent, headways picking up and discharging passengers anywhere along the route. Though jitneys are often found operating in competition with buses along high-density traffic corridors, it has been suggested that their small capacity, low cost, and flexibility would make them suitable for low demand areas, such as suburbs or smaller cities. As with the other modes, the intention is that savings resulting from increased utilization of the vehicle would result in lower fares. Jitneys are currently illegal in most cities and would require more regulatory change than shared ride taxi service. Under current regulations, some cities would require jitneys to be franchised like a bus. Fixed-route jitney service would require procedures for setting routes and reviewing route changes, a new fare system, special franchising, and new operating standards regarding dispatch, hours of operation, and jitney stops. Taxi-type regulations for driver's permits and financial responsibility might well apply to jitneys.

Despite the potential of these innovative service modes for reducing the fare paid by the individual taxi user, their application in small cities may face some limitations. Shared-ride and group ride depend on having sufficient travel demand to permit sharing the vehicle. However, the limited travel demands of a small city, when spread out over a large, low-density area, may not produce enough simultaneous trips with similar origins and destinations to make operations practical. Financially successful dial-a-ride taxi services have, however, operated in cities as small as Davenport, Iowa (population 98,457) and Hicksville, New York (population 48,075)[14]

market entry limitations

Existing regulations over market entry may also have the effect of limiting the mobility of those persons dependent on the taxi. Market entry restrictions control the number of taxicabs allowed to provide service in a given jurisdiction. The restrictions can be either the result of local legislation or of administrative policy. The restrictions can be in the form of set numerical limits, exclusive franchises to single operators, or the requirement of a fixed taxi to population ratio. The franchises for operation awarded under the restrictions can sometimes be sold, as in the case of the New York City taxi medallion, which represents the

franchise. These restrictions exist to protect the financial health of the taxi industry by reducing the competition among taxi firms. Taxi operators have lobbied for this policy by saying that this ensures financial responsibility in case of mishap, and that it allows them to provide better service through the cross-subsidization of unprofitable operations. The economic justification is that since the regulations effectively fix the size of the market for taxi service by setting the fare rates, they should also limit the number of cabs competing for that market. Limitation, it is argued, would guarantee adequate revenues to cover costs and provide a reasonable return on invested capital.

Some researchers, however, have suggested that removing the limits on entry would enable the market to provide greater numbers of taxis at lower cost.[15] Additional benefits from deregulation would include increases in the number of jobs available to unskilled workers and in the number of autos available to low-income persons who can use off-duty taxis as family cars.

This policy recommendation may be of value in the large cities where the relationship between the scarcity of cabs and high fares can be documented, but the survey of taxi users in North Carolina reveals that the effects of market entry regulations may not be as great in the small city. Each of the sample cities required that an applicant for a taxi franchise prove that the public convenience and necessity would be served by additional cabs, but there are no numerical limits contained in the taxi ordinances. An administrative policy limit exists in some of the cities, but even in those cities the number of active cabs was less than the number permitted (see Figure 2). It would appear that in the smaller cities sampled there is no effective barrier to market entry. State enabling legislation in North Carolina provides for the removal of franchises from inactive cabs, and forbids the transfer of franchises between operators. Enforcement of these provisions makes it difficult for a taxi operator to limit competition by maintaining franchises for inactive cabs or by purchasing franchises to prevent their use by others. A local policy of removing franchises from inactive cabs and reallocating them on the basis of convenience and necessity would enable continuing public control over the supply of taxi service as well as the price. Such a policy would prevent the accumulation of monopoly power by individual firms, at the same time limiting the total size of the market. Competition on the basis of service would be maintained even as industry revenues were protected, resulting in better service at the least cost to the user.

summary

It can be seen that the taxi is an important part of the urban public transportation system. This is particularly true of the smaller city, where taxis serve a predominantly low-income, transit-dependent population. In the past public policy regarding the taxicab has been in the form of municipal regulation similar to that accorded a privately-owned utility. However, increased recognition of the public service that taxis perform by providing basic mobility to the taxi dependent population should lead to changes in that public policy. Alteration of transit subsidy programs to reflect taxi participation, the reform of operating regulations to promote ride sharing, and changes in market entry controls could provide increased mobility for those dependent on taxis by lowering the cost to the user.

Footnotes

[1]John D. Wells and Fred Selover, "Characteristics of the Urban Taxicab Transit Industry", in *Economic Characteristics of the Urban Public Transportation Industry*, p. 8-5.

[2]Gorman Gilbert, *Taxicab User Characteristics in Small and Medium-size Cities*, unpublished preliminary survey data.

[3]Ronald J. Fisher and James A. Bautz, "Potential Markets for the Taxicab Industry", p. 2.

[4]Ronald F. Kirby, Kiran U. Bhatt, Michael A. Kemp, Robert McGillivray, and Martin Wohl, *Para-Transit, Neglected Options for Urban Mobility*, p. 114-119.

[5]This article is an outgrowth of a project initiated in January, 1975, to determine the social and economic characteristics of taxicab users in small and medium-sized North Carolina cities. The research was funded by the Urban Mass Transportation Administration and conducted by Bob Bach, Frank Dilorio and Fred Fravel, graduate research assistants, under the direction of Dr. Gorman Gilbert, Associate Professor in the Department of City and Regional Planning at the University of North Carolina, Chapel Hill.

[6]*North Carolina General Statutes*, Chapter 160A, Section 304, Regulation of Taxis.

[7]Arthur L. Webster, Edward Weiner, and John D. Wells, *The Role of Taxicabs in Urban Transportation*, p. 2-8.

[8]Urban Mass Transportation Administration, *Excerpts from External Operating Manual, August, 1972, Program Information for Capital Grants and Technical Studies Grants*, p. IIB-19.

[9]Fisher and Bautz, p. 2.

[10]Under Section 5 of the National Mass Transportation Assistance Act of 1974, applications for these subsidies must be processed through the local transportation planning procedure and submitted by a public agency. The deficits on operations can be subsidized on the basis of a 50% contribution from the local government being matched by an equal federal subsidy. Capital grants are made on a 20% local, 80% federal matching grant formula. These funds are currently restricted to urban areas over 50,000 population.

[11]J.R. Meyer, J.F. Kain, and M. Wohl, *The Urban Transportation Problem*, p. 356.

[12]Manny Cruz, "The Taxi: One City's Transit System", *Nation's Cities*, December 1974, p. 39-45.

[13]West Virginia Department of Welfare, *TRIP Facts*, p. 1-2.

[14]Frank W. Davis, Kenneth W. Heathington, Richard T. Symons, Stephen C. Griese, Roger W. Alford, and David P. Middendorf, *Economic Characteristics of Privately-Owned Shared-Ride Taxi Systems*, p. 8-10.

[15]S. Rosenbloom, "Taxis, Jitneys, and Poverty", *Transaction*, February 1970, p. 47-54.

TAXI USER CHARACTERISTICS STUDY

FIGURE 2, SAMPLE CITY DESCRIPTION SUMMARY

City	1970 Census Pop.	Franchised Cabs	Active Cabs	Active Cabs/ 1,000 Pop.	Regulation (2), (3), (4)					Competition to Taxis	
					Cab Inspector	Fare Type	Entry Limits	Shared Ride	Group Ride	Transit System	Public Transp. for Special Groups
Greensboro	144,076	135	128	0.8884	yes	meter	number (135)	yes	yes	yes	no
Durham	95,438	115	100	1.0476	yes	meter	number (115)	yes	yes	yes	yes
Wilson	29,347	50	47	1.6015	yes	meter	number (50)	yes	yes	yes	yes
Goldsboro	26,810	75	58	2.1633	yes	zone	none	yes	yes	no	yes
Salisbury	22,515	24	15	0.6662	no	meter	none	yes	yes	yes	no
Lexington	17,205	20	10	0.5873	no	meter	to one firm	no	yes	no	no
Morganton	13,625	45	45	3.3027	no	zone	none	yes	no	no	no
Roanoke Rapids	13,508	18	20 (1)	1.4806	yes	meter	none	yes	yes	no	yes

1. Includes cabs from adjacent Weldon, which have a limited franchise.

2. None of the cities have effective entry restrictions into the taxicab business. Limits listed do not appear in the taxi ordinances; rather they are matters of policy established by decisions on additional franchises.

3. Those cities which permit shared riding (by passengers who may have different origins and destinations) do so only with the consent of the first passenger.

4. A group ride is defined as a single fare for 1 to 5 passengers who have a common origin and destination.

state land policy: new directions in planning?

The 1974 session of the General Assembly enacted two major pieces of legislation which suggest North Carolina has made a significant commitment to land use planning — the Coastal Area Management Act and the Land Policy Act. The commitment expressed in the coastal legislation is relatively firm and effects of the Act are already beginning to emerge as the Coastal Resources Commission moves ahead with implementation.[1]

The Land Policy Act, while perhaps more comprehensive in scope than the coastal legislation, carries no direct powers of implementation. Its purpose is to develop land use policy recommendations. Implementation will depend on future action by the Governor, the legislature, and local governments. Impacts of the Act have not yet been felt nor its long range potential widely recognized because it is over a year away from implementation. This, however, does not decrease the need for citizens and public officials interested in land use to be aware of the Act's provisions and to be afforded opportunities for input into the activities of the North Carolina Land Policy Council.

the land policy act

"New Directions in Planning" is how State land policy has been characterized in the informational materials produced by the Land Policy Council. What new directions, if any, are likely to emerge from the Council's activities? How might land use decision-making in North Carolina be affected?

Governor Holshouser first established the Land Policy Council by executive order in August, 1973. The Council's early activities dealt chiefly with management of state-owned lands and on laying some necessary technical groundwork. Recognizing that "the land of North Carolina is a resource basic to the welfare of her people," the General Assembly unanimously endorsed the passage of the Land Policy Act in April, 1974. A fourteen member Land Policy Council was created, consisting of the heads of eight state departments, four members of the legislature, including the Lieutenant Governor and the Speaker of the House, and two local elected officials, one each selected by the Association of County Commissioners and the League of Municipalities.

The Act also provides for a citizen's Advisory Committee on Land Policy, a twenty-four member body appointed by the Governor and composed of twelve municipal and county elected officials and twelve representatives selected from a range of land use-related interests. A major duty of the Advisory Committee is to assist the Council in securing public participation in the process of determining state land policy. Other duties include assisting and advising the Council on alternative policies and management techniques. The Advisory Committee has been meeting monthly since May, 1975, playing an active role in developing the citizen participation program and in reviewing and commenting on staff proposals before they are presented to the Council.

Primary duties of the Land Policy Council include preparing an information system, providing technical assistance and training, dealing with the impact of large-scale developments, identifying areas of environmental concern, and coordinating state and local land use-related programs. Its recommendations are to be presented to the Governor by July 1, 1976. The Governor, in turn, is to submit a proposed state land policy and the necessary implementing legislation to the 1977 session of the General Assembly.

state land policy—first draft

The primary products of the Council's activities are to be a State Land Classification System and a State Land Policy. The First Draft of a State Land Policy was completed in mid-October and is being circulated for comments and suggestions.[2] The document addresses a wide range of land use issues including developmental problems, protection of particularly valuable resource lands, and land use aspects of various environmental quality issues such as air and water pollution and scenic quality. Particular attention has been given to institutional problems which result in poor land use decision-making.

The Council recognizes mere statements of policy will have no impact unless they serve as guides to decision-making. Therefore, an "action plan" is being devised which proposes specific strategies for implementing each of the stated policies.

The framework within which these land use issues are developed is threefold: (1) issues of "greater than local concern," (2) coordination of existing land use and land use related programs, particularly public investment, and (3) the use of locally formulated land use plans as a guide for state and even federal decision-making.

William Swindaman is a member of the land policy staff in the Office of State Planning, Raleigh, North Carolina. He received his Master of Regional Planning degree in 1973 from the University of North Carolina, Chapel Hill, concentrating in land use planning.

greater than local concern

The Council finds that "In North Carolina, most decision-making powers affecting land use have traditionally been exercised at the local government level and this should continue to be the case." It recognizes, however, that "in certain situations the land use activity has an impact on more than the immediate local area, and a broader range of interests should be considered." Therefore, the Council has adopted the policy that the *"State will become involved in the local land use decision-making process only where issues are of more than local concern."*

> . . . the Council has adopted the policy that the "State will become involved in the local land use decision-making process only where issues are of more than local concern."

One of these areas is "key facilities." The Land Policy Act defines key facilities as "public facilities which tend to induce development and urbanization of more than local impact" including but not limited to "major facilities for the development, generation, and transmission of energy, for communication, and for transportation." These facilities, which are funded largely by the state and federal government, can have a major impact on decisions made by the private sector. The location of a major highway and its associated access points, for example, or the construction of a regional wastewater treatment facility, can have a direct and profound impact on the use of the surrounding land and the potential for growth in the region. The proposed policies suggest that the public monies spent to provide these facilities should be allocated in a way that recognizes their potential land use impact. The Council has begun to define which public facilities meet the key facility definition and what mechanisms should be used to deal with their impact.

A second area identified as being of greater than local concern is "areas of environmental concern." These are lands which, according to the Act, are either hazardous for development or have important values that are particularly susceptible to damage if subjected to uncontrolled development. Included within this definition are fragile lands (wetlands, unique natural areas, and historic sites), hazard lands (floodplains and erosive areas, for example), renewable resource lands (areas best suited for farming and forestry), and mineral resource lands. These are all areas that possess characteristics important to the citizens of the entire state. The statewide significance of some of these areas has already been recognized with the passage of the Coastal Area Management Act. The Council has proposed specific policies aimed at the protection of these lands, and has recommended that "land use within areas of environmental concern should be regulated, and land procurement and facilities control be coordinated to achieve the protection goals for each area."

In addition to areas of environmental concern and key facilities, the Council has also identified "large-scale developments" and "projects of regional benefit" as being issues of greater than local concern. Large scale developments are private developments having more than local effect such as new communities, large shopping centers, major recreation facilities and subdivisions. Projects of regional benefit, while not having a great physical impact, do have effects that are felt over more than one unit of government. They include public and private projects performing essential public services and charitable institutions.

application of existing programs

One of the major purposes of a state land policy is to devise a way to apply the many existing programs in a more coordinated and mutually supportive manner. While some of the environmental areas may need the benefit of additional regulation, many of the issues can be dealt with by improved coordination of existing state and local regulations, by re-orienting land acquisition programs, or by altering policies for the provision of public services and facilities.

Fragile lands would be considered for designation as areas of environmental concern.

North Carolina Travel Development Photo

A recent study by the land policy staff has identified 61 state programs in 12 departments which either directly or indirectly have a potentially significant impact on land use. These programs, operated by various agencies with different goals, understandably result in fragmented decision-making. Some programs have competing objectives which work at cross purposes. Others share similar objectives and activities, but, because of poor coordination, miss opportunities to support each other. It is felt that the existing programs can serve the needs for which they were originally enacted and help achieve broader state and local land use objectives as well.

A recent study by the land policy staff has indentified 61 state programs in 12 departments which either directly or indirectly have a potentially significant impact on land use.

Coordinating existing programs, particularly public investments, has been a concern voiced by the Council throughout its deliberations and one which is reflected in several of the proposed recommendations. The Council recognizes the capability of state programs to influence growth and urges "the use of public investments, property tax, and regulatory programs by state and local government to guide the location and timing of growth." In reference to growth policy, key facilities, large-scale development, and areas of environmental concern, the Council places a strong emphasis on the need for a more systematic application of both public investments and regulatory programs.

Some state agencies have already taken positive steps toward coordination of these land use related programs. The land policy staff is currently analyzing these efforts with the intention of recommending specific organizational arrangements to achieve improved organization. Hopefully the result will be a simplified land use decision-making process which will not only permit the effective attainment of a broader range of public objectives, but will also prevent wasted time and funds on the part of the private sector. By speeding up land use decision-making, simplifying the permit process (there are currently over 20 different regulatory permits and licenses that may be required of a developer), and announcing in advance where public facilities are likely to be provided, potential land users will be able to conduct their business more efficiently. This is a "new direction" which should be welcomed by those in both the public and private sector who are concerned with the wise and efficient use of North Carolina's land resources.

primacy of local plans

A third concern emphasized in the draft policies is one encouraging local governments to take the initiative in preparing their own plans as a guide to state and federal decision-making.

With this condition in effect, state agencies will be required to adjust their regulatory and investment programs so they conform to locally formulated plans. The state will become involved in local decisions only where there is a legitimate statewide interest.

A similar arrangement is envisioned with regard to the federal-state relationship. Just as many state agency programs occasionally conflict with each other or with local objectives, programs operated by the federal government often work at cross-purposes with each other or with state and local objectives. A recent report by the Council of State Governments notes that at least 137 federal programs have a direct impact on land use. The Land Policy Council has emphasized that "Federal legislation is needed to provide coordination for the various Federal agencies and programs related to land use, and to ensure consistency of Federal program action within the State." The Council further asserts that "the State and local governments of North Carolina are in a better position than the Federal government to ascertain the needs and desires of the people of the State." It expresses the hope the land use program being developed under the Land Policy Act will help convey North Carolina's interests to the federal government. Once a state program is in operation, "Federal decisions should take precedence (over state interests) only in cases of overriding national interest." Such an approach is already being implemented in North Carolina's coastal counties under the Federal Coastal Zone Manage-

Local governments are encouraged to initiate local plans.

ment Act of 1972 (P. L. 92-583). The Council is suggesting joint federal-state action to make a similar approach operative statewide.

Improved coordination is an often recommended, but seldom achieved goal. Fortunately, there are at least two encouraging signs which suggest improved coordination may be accomplished by the Land Policy Council. First, coordination has not been an afterthought. Simplifying and streamlining the decision-making process is a major component of the land policy work program and will be emphasized in the state land policy which the Council ultimately recommends to the Governor. A second factor which may foster greater coordination is the development of a land classification system. As we shall see, land classification has the potential to facilitate the coordination of public investments and regulations and to encourage intergovernmental coordination.

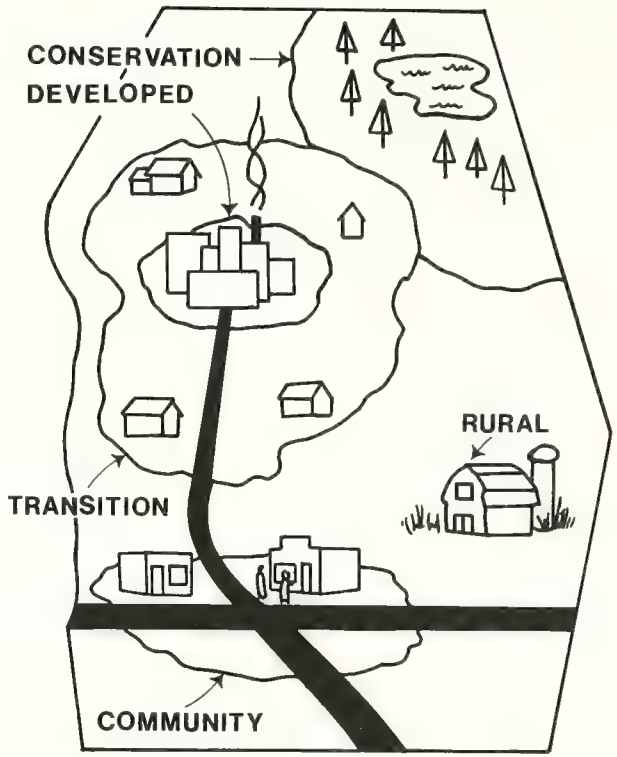
land classification

The Land Policy Act outlines several broad guidelines to follow in developing a land classification system. The system is to be divided between four and eight classes, defined on the basis of both the natural qualities of the land and the availability of public services. It is to include concise descriptions of each of the land classes, guidelines and procedures for the preparation and review of land classification plans, and procedures for reclassification and for appeals by property owners. The Council is directed to recommend a system, including the necessary implementing legislation, which can be implemented by January 1, 1979. The Act also requires that planning agencies in the state be given an opportunity to formally review and comment on the Council's proposals. If a majority of local planning agencies proposes a recommendation to change a proposal, the Council is required to amend the proposed system.

A third draft of the system, which suggests some general descriptions for the land classes and discusses its potential uses, was completed and distributed for comment in June, 1975. This draft[3] is essentially the one adopted in February, 1975, by the Coastal Resources Commission as part of their *Guidelines for Local Planning in the Coastal Area Under the Coastal Area Management Act of 1974*.

The land classification system as described in the coastal guidelines is a preliminary one. The class definitions are admittedly imprecise and considerable refinement will be necessary before a system capable of being implemented statewide can be recommended. According to the land classification system outlined, all of the lands in each of the twenty coastal counties are to be placed in one of the following five classes:

> *Developed* - Lands which are already developed at a gross density of at least 2,000 people per square mile and which have a variety of land uses that are provided with the necessary public services.



An illustration of the proposed land classification structure.

Jane Smith, Office of State Planning, Raleigh, N.C.

Transition - Lands where the local government plans to accomodate its projected growth for the following ten year period at a moderate to high density pattern of development and where necessary public services will be provided.
Community - Clusters of existing low-density development or areas where such growth will occur in the following ten years. This class is intended to identify those rural communities where development will be encouraged, but not at a density requiring extensive urban services like public sewers.
Rural - Lands whose highest use is for agriculture, forestry, mining or water supply; and all lands which do not fall into any of the other four classes.
Conservation - Fragile, hazard, and others lands "necessary to maintain a healthy natural environment and necessary to provide for the public health, safety, or welfare."

While the coastal guidelines largely leave to local governments the problem of determining the process to be used in arriving at county land classification plans, land classification is clearly intended as a *planning process.* It involves an integration of land capacity considerations, estimates of future land needs, considerations of the fiscal capabilities in providing necessary public services, and local and state land use policies and objectives. As such, it will then result in county-wide planning throughout the state. This alone will be a significant step forward as many areas within the state with important resources support little or no planning activities.[4]

Land Classification will act as a catalyst, encouraging *all* the counties to begin making basic determinations about which areas are best suited for growth and are to be provided with urban services, which areas should remain rural or primarily agricultural, and which lands ought to be conserved. And, for the first time, the citizens of North Carolina will be encouraged to seriously consider what sort of future they envision for all of the state's land resources.

Land classification will act as a catalyst, encouraging *all* the counties to begin making basic determination about which areas are best suited for growth and are to be provided with urban services, which areas should remain rural or primarily agricultural, and which lands ought to be conserved.

Of course, simply preparing 100 county land classification plans will not determine the future landscape of North Carolina. As economist Kenneth Boulding has stated, "The world moves into the future as a result of decisions, not as the result of plans. Plans are significant only in so far as they affect decisions."[5] Land classification has the potential to establish some new directions in decision-making as well as in planning. Hopefully, along with expressing preferences as to where growth should occur, local governments will also be making some basic commitments for future decision-making too. For example, the land classification plan can provide the framework for determining where water and sewer services are to be provided, where local investments for schools and recreation should be focused, and how local regulations are to be applied. Likewise, land classification, by establishing a broad planning framework which is consistent statewide, can serve to link local planning with state policy and with state agency decision-making. The policy objective of improving intergovernmental coordination could also be achieved if state agency decisions over facilities funding and

Land classification can provide a framework for state-wide resource management.

North Carolina Travel Development Photo

construction, land acquisition and management, and regulation were required to conform to local land classification plans. In addition, coordination between local governments can be encouraged as municipalities and counties work together in formulating the county land classification plan. And perhaps federal decision-making can be affected if land use policies are translated into physical terms and North Carolina is in a better position to substantively influence federal land use related decisions.

These are ambitious objectives. In order to achieve them, the land classification system must be a useful planning tool for local governments and must be accompanied by an administrative structure that will insure its utility as a coordinative device. Land classification is intended to be a broad-scale planning effort, particularly suited to the many areas in the state that have done little or no planning. The system is not intended to replace present planning activities at the local level. While it offers some real potential for improving land use decision-making in North Carolina, land classification is not designed to address the many detailed planning issues which must be resolved at the local level. At the same time, however, land classification is intended to function as a useful framework for, and serve as a way to coordinate, the many ongoing local and regional planning programs. As Elizabeth Haskell, a consultant to the Land Policy Council on organizational matters has stated, the goal is not to "simply add another overlay on the confused map of planning requirements already placed on local governments and the region."[6] Rather, land classification must integrate these existing planning efforts.

Land classification is intended to provide a broad, but uniform, statewide framework for local land use planning. Its approach differs from that taken by many other states in at least two ways. First, in drawing up its land classification system the North Carolina General Assembly has chosen an approach which will give local governments the opportunity to put together their own land use plans which will then form the basis of the state plan. Second, North Carolina's land classification system does not rely solely on regulation. Its goal is to encourage a statewide but locally administered planning process that can serve as a guide for state and local public investment decision-making, regulation, and perhaps, property taxation.

The land policy staff in conjunction with the North Carolina State University Computer Science Department, has also given considerable attention to exploring the feasibility of establishing a computer-based information system in North Carolina.

land use information

The Land Policy Act finds that in North Carolina there exists "a lack of systematic collection, classification, and utilization of information regarding the land resources." One of the stated purposes of the Act is, therefore, to "promote the development of methods for the exchange of land use, environmental, economic, and social information among all levels of government."

In response to this charge, the land policy staff has begun the development of a "Land Use Information Service." Basic information needs for preparing land classification plans and for carrying out regional and state planning responsibilities have been identified. A *Catalogue of Land Related Information* has been prepared. This manual provides an index of a relatively large assortment of available information which might be useful to those involved in local planning. The manual allows for periodic updating, and is intended to be distributed to local and regional planning agencies, public libraries, planning consultants, and other interested organizations.

The land policy staff in conjunction with the North Carolina State University Computer Science Department, has also given considerable attention to exploring the feasibility of establishing a computer-based information system in North Carolina. The purpose of the system being considered is to provide a uniform structure which can be used to encourage consistency in the collection of land use related information. The intent is to provide a framework to encourage consistency in the many ongoing and future data collection efforts, and provide for storing and making this information accessible to local planners and state agencies. Computer storage of current data in this standardized framework will create a valuable new reservoir of information that has not in the past been readily available for use in land planning and decision-making.

citizen participation

The Land Policy Act has made provision for public input through required public hearings, the establishment of the Land Policy Advisory Committee, and the formal review process for land classification that was mentioned earlier. According to the Act, at least six public hearings are required, two in each of the state's three physiographic regions. These hearings are scheduled for the Spring of 1976.

While the hearing process is a necessary and useful one it involves a limited number of persons and is scheduled somewhat late in the policy formulation process. Therefore, the Council has, in cooperation with the Land Policy Advisory Committee, made a more extensive effort to actively involve the public in the land policy program. Six workshops have been held across the state, with more planned. Technical

Citizen participation is a required part of the land policy strategy.

committees have been established to provide assistance in particular areas. Drafts of land classification system proposals and the state land policy have been widely circulated for comment. In addition, a series of slide shows, pamphlets, and questionnaires have been prepared for use in discussions with local civic organizations and various interest groups. Hopefully, through these and other means, the Land Policy Council and staff will gain an accurate understanding of how the citizens of North Carolina feel about the current efforts to develop a state land policy. Likewise, it is also hoped that the public will become aware of the objectives of the Land Policy Act and of the need for more effective land use planning.

conclusion

The land policies and the land classification system in draft form will be subject to additional staff work, public input, and consideration by the Land Policy Council and the Advisory Committee. These drafts do begin however, to suggest some new directions toward which the Land Policy Council is aiming.

If successfully implemented, the Land Policy Council recommendations will help ensure that land use issues of statewide concern are addressed. Critical environmental resources will be protected and the impact of major public facilities will be better managed. A basic level of local planning will be instituted statewide, and local planning will be linked with local, state, and even federal decision-making. The many land use activities of local and state government will be carried out in a more coordinated fashion as more consideration is given to their land use impacts.

Government is properly limited in the impact it can have on private land use decisions. But a state land policy, combined with effective local planning, can provide the means to balance private with public interests and environmental concerns with social and economic concerns. It can help guide both public and private decisions so that potential land use problems are avoided or addressed before they arise.

The policy work of the Council suggests what needs to be done. The question of how to enact the proposals remains unresolved. The Council has yet to determine, for example, how land classification can best be linked to local and state government decision-making, how the property tax and regulatory tools should be related to land classification, and what the respective roles of the city and county should be in producing a plan that is useful to both. Perhaps the most difficult implementation issue is how to best provide the financial and technical resources necessary to assist local governments in their planning and management programs.

Whether any new directions in land use decision-making are actually achieved depends upon how the Land Policy Council resolves these problems of implementation and, ultimately, on the reactions of the Governor, the legislature, and local governments.

Footnotes

[1]For a description of the Act see Arthur Cooper and Stuart George, "Coastal Area Management Act: Regional Planning for the State's Coastal Area," *Carolina Planning*, Vol. 1, No. 1, Summer, 1975.

[2]Copies of "First Draft of a State Land Policy" are available from the Land Policy Staff, Office of State Planning, 116 West Jones Street, Raleigh, N.C., 27603.

[3]Another draft reflecting additional staff work, proposals from the Advisory Committee on Land Policy, and the experiences to date of the twenty coastal counties, will be circulated for review and comment early in 1976.

[4]A recent survey by the land policy staff indicates that slightly over half of the State's counties and only about 40 percent of its municipalities have prepared a land use plan. Many of these are out of date or not utilized for decision-making.

[5]Kenneth Boulding, "Reflection on Planning: The Value of Uncertainty," *Technology Review*, October/November, 1974, p. 8.

[6]These comments are contained in a draft report presented to the Council in October and December 1975, entitled *Land Use in North Carolina: Governmental Organization and Coordination*, by Elizabeth Haskell with the assistance of Victoria Price.

a rejoinder: questions on north carolina land policy

In his article on new directions in state land policy, Bill Swindaman has presented a hopeful and positive view. For balance, some questions about the proposed North Carolina land policy approach need to be raised, if only in preparation for the questioning that will arise when the General Assembly considers the implementing legislation in 1977.

At the time of its passage in 1974, the Land Policy Act was thought by many to be a "toothless tiger." Lacking concrete policy proposals and implementation powers, it seemed more like a rhetorical preamble to a land policy than a proposed solution to the state's development problems. Fortunately, the easing of development pressure due to the national economic situation gave us a breathing spell during which we could afford to make use of the three year study approach of the Act. During the past two years a well organized and energetic study effort has been mounted by the Land Policy Council staff, and the fruits of their labors are becoming available for inspection. Planners, public officials, and others affected by the policy must now critically examine the products of the Council's work, and decide about their utility and feasibility.

. . . the many "new directions" in the proposed approach are somewhat reminiscent of a patchwork quilt. It's almost as if the framers of the Land Policy Act were unwilling to leave out anything that another state had tried.

a policy or a patchwork quilt?

To this observer, the many "new directions" in the proposed approach are somewhat reminiscent of a patchwork quilt. It's almost as if the framers of the Land Policy Act were unwilling to leave out anything that another state had tried.

Thus, in the North Carolina proposal, the Hawaii land classification system is added to the Florida critical areas approach and parts of the Vermont development permit process are thrown in for good measure. The result is a land policy that is much more complex and less clear than that of these states, all of which have had limited success in carrying out even their simpler and more cohesive approaches.[1]

A patchwork quilt can be beautiful and well designed, but great care and skill are required to avoid clashes between its disparate elements. This demands planning and administrative staff capacities at state, regional, and local levels to match the large responsibilities imposed by a complex and ambitious approach. In reviewing the North Carolina land policy proposal, questions should be asked about the potential effects of broad local decision-making autonomy, weak implementation power, very complex procedures and designations, great need but limited potential for financial support, and unclear measures for ensuring regional equity.

is local autonomy wise?

One of the distinctions claimed for the North Carolina approach is that it puts the authority and responsibility for planning at the local level. Thus, the overall state land classification map will be a compilation of city and county maps, whose procedural adequacy—but not content—will be reviewed by the state. Even for an advocate of decentralized planning and decision-making, this is a breathtaking award of local autonomy.

Obviously, this will curtail state intervention in land policy decisions, but will it promote good land classification decisions? Consider the record of local governments in North Carolina, which have had enabling legislation for planning and land use regulation for years but have done little effective planning or regulation outside the major urban areas. County planning is often weak in those rural areas which tend to attract large scale development, such as recreational subdivisions, super farms, and mining operations.

Do local planners really want autonomy, or do they simply want to share planning authority with state government? Local planners often call for strong state guidance, as a means of balancing a broader public interest against strong local development interests. It may be false to assume that local planners want the land policy buck.

From the viewpoint of private developers, even if all one-hundred counties adopt land classification plans, there may be serious questions about uniform treatment under a local autonomy approach. What will ensure that similarly situated land is treated similarly in different counties? Unless it is, there can be constitutional grounds for equal

David Godschalk is an Associate Professor in the Department of City and Regional Planning, University of North Carolina, Chapel Hill, where he teaches courses in regional land policy. He is a past Editor of the Journal of the American Institute of Planners.

protection challenges in the courts, which could bog down the land classification process for years.

For implementation of state land policy, won't there have to be a strengthening of planning at the state and regional levels, as well asthe local level? The Swindaman article does not mention the first set of findings and policies in the October, 1975 Draft Land Policy, which states that "growth centers" should be designated to act as focal points for growth in their regions. This would appear to call for strong state government action, unless every crossroads community is to be designated as a growth center. As North Carolina knows from experience with the growth centers concept, it is hard to exclude any place from growth center status if the designation process is opened to local politics. The inescapable conclusion is that state and regional capabilities must be increased along with local capabilities; this has been evident in coastal planning, which involves only one-fifth of our counties.

The inescapable conclusion is that state and regional capabilities must be increased along with local capabilities; this has been evident in coastal planning, which involves only one-fifth of our counties.

where is the power to implement?

It is not clear how the land policy objectives will be achieved under the limited powers proposed. Swindaman notes that the policy does not rely solely on regulation, but also encourages planning. Planning and coordination have been "encouraged" for many years; the results are all around us. Basically our system is one of competing interest groups, both public and private, who will coordinate voluntarily only when they can benefit.

Presumably the regulative power will center around required land classification plans. But land classification (at least as used in Hawaii) is very much like zoning *writ large,* and zoning has not previously been effective in guiding development into planned patterns. The big question about land classification, as about zoning, is how difficult it is for a developer or entrepreneur to get it changed to fit his proposed project. Years of experience in Hawaii have shown that decisions on amendments, even when made by a state commission, tend to be decided on grounds outside the adopted policy guidelines, and that most amendment requests are granted.[2] When land classification decisions are made locally, it is hard to imagine that the amendment process will be more firmly administered than in the centralized Hawaiian system.

is the approach too complicated?

The variety of elements in the proposal make it difficult to grasp, much less to administer, as a unified land policy. Despite the stated desire not to "add another overlay on the confused map of planning requirements," the proposal will actually add several new overlays: land classification, areas of environmental concern (AEC's), key facilities, large scale developments, and projects of regional benefit.

Not only must these new elements be considered in relation to existing zoning and other land use regulations, but also they must be internally consistent. It is easy to visualize a host of potential conflicts between AEC's and land classification. Do we really need a "conservation" classification separate from AEC designation? Their definitions sound almost identical; both include fragile and hazard lands, though AEC's also include the renewable resource and mineral resource lands that are covered by the "rural" classification. Do we really need both key

Are both areas of environmental concern and the land classification system needed to manage North Carolina's resources?

North Carolina Travel Development Photo

facilities and projects of regional benefit, whose definitions are very similar? Do we really need five land classes; or would a simpler three classification system (urban, rural, and conservation) work better? In the final analysis, do we really need both comprehensive regulation by land classification and selective regulation by AEC's, etc.? Remember that in some Mountain and Piedmont counties the system may have to be administered by the local building inspector, who is expected in many Coastal counties to administer minor development permit approval under the Coastal Management Act. An uncomplicated approach would seem to be a must.

where will the funding come from?

One of the most practical questions about the proposal centers around its lack of visible means of support. Budgeting local staff salaries and state technical support for one-hundred county planning and regulation efforts is potentially more expensive than even a sizeable state planning office. Either increased funds will have to be taken from local tax revenues to pay for these new government activities, or new state or federal funds must be found.

Unfortunately, the state fiscal picture is lean, and the steam seems to have gone out of the Congressional support for a national land use bill which would have provided federal funding for state land use planning. At the same time, the federal 701 planning assistance program, which provides direct support for local planning, has come under increasing fire and its future is in doubt. Will local governments be willing to allocate their limited revenue sharing funds to carry out state land policy? Can the state land policy program be piggy-backed on other federal programs, such as 208 areawide waste treatment management? The fiscal viability of the proposed land policy must be squarely faced.

Will local governments be willing to allocate their limited revenue sharing funds to carry out state land policy?

how will the regional welfare be assured?

In dealing with cases involving city and county growth management efforts, the courts have increasingly extended the concept of the general welfare from the local to the regional level. This was a key issue in the Ramapo, Petaluma, and Mount Laurel cases. It would be the basis for serious challenges to individual county land classification plans that ignore or pay lip service to regional needs.[3]

The equity issue is addressed in part in the Draft Land Policy, under projects of regional benefit. The stated intent is "to ensure that local policies and decisions do not act to the detriment of broader community needs." Projects of regional benefit are to serve both citizens of more than one locality and those who require public assistance. Examples given are charitable institutions and regional public service facilities. The policy recognizes that such projects are not always welcomed by local communities, and calls for state development of a decision process accessible to all those in the region affected by the project.

Is this sufficient? Regional welfare is not simply a matter of project location; it penetrates all land use and development decisions. Limiting the local growth rate affects the surrounding region, as does trying to increase the local share of projected growth by classifying an overly generous amount of local land in the "transition" category. The regional fair share concept includes not only charitable institutions and public service facilities, but also low and moderate income housing and employment opportunities. Can we afford to leave our regional planning agencies without a major role in carrying out state land policy?

work to be done

In reading the Swindaman article, you can't help noticing how many times the word "hopefully" is used to refer to anticipated effects of the proposed policy. At the same time, he recognizes that the hard questions of implementation are unresolved. My point is that implementation must be considered at the same time that policy is designed, if policy outcomes are to be workable.

My comments admittedly have focused on the hard questions, rather than on answers. They are not intended to downgrade the work of the Land Policy Council and its staff, who have been impressive both in their determination to meet the challenges of forging a state land policy and in the imagination and breadth of their recommendations. I too am hopeful that the questions raised will point out opportunities for strengthening an already vigorous proposal for a state land policy.

Footnotes

[1]Godschalk, David R. (1975) "State Growth Management: A Carrying Capacity Policy." In R.W. Scott, D.J. Brower, and D.D. Miner (eds.), *Management & Control of Growth*. Volume III. Washington, D.C.: Urban Land Institute.

[2]Lowry, Kem, and Michael McElroy. (1975). "State Land Use Control: Some Lessons From Experience." Paper presented at AIP Annual Conference, San Antonio, Texas October.

[3]Franklin, Herbert M., David Falk, and Arthur J. Levin. (1974). *In-Zoning: A Guide for Policy-Makers on Inclusionary Land Use Programs*. Washington, D.C.: Potomac Institute.

is there an alternative to the nursing home for north carolina's elderly?

The majority of North Carolinians can look forward to a long life, unthreatened by major epidemics of communicable disease and malnutrition. But even though most of us will reach the age of 65, it is likely we will be frustrated with one or more chronic conditions that will restrict the pleasures of normal activity. The present medical system, focused on the acute episode of illness, is poorly equipped to deal with the health needs of the chronically ill elderly. The medical system has run them in and out of expensive general acute care hospitals and discharged them, often disabled, with no provision for care other than family endeavors. When the burden of caring for an elderly family member becomes too great, the long term institution is often the only resort.

Institutionalization is an expensive answer to the problems of the long termed disabled. North Carolina spent over 10 million dollars in state Medicaid contributions in fiscal year 1975 to support the elderly in long term skilled and intermediate care facilities. This fact coupled with the realization that institutionalization can be a demeaning and hopeless way to spend one's last years have spawned an interest in two alternatives-home health and geriatric day care. Both programs are aimed at allowing the aged the option of remaining in the community by supplementing family support for aged members. This article attempts to analyze the three alternatives as they operate in North Carolina, from a cost effectiveness point of view.

health problems of the elderly

In 1970, 8.1 percent of the population in North Carolina was over the age of 65, compared to 9.9 percent of the total United States population. However, North Carolina's elderly population is growing at a faster rate than that of the U.S. The percentage increase in the population 65 and over between 1960 and 1970 in North Carolina was 32.7 compared to a 21.2 percent increase in the U.S. According to projections by the North Carolina Governor's Coordinating Council on Aging, the state can can expect the same rapid increase in the over-65 population during the next decade.

When the rapid increase in the number of elderly is considered along with the prevalence of chronic disabling conditions in that population, the magnitude of this problem becomes evident. The most recent U.S. Health Interview in 1972 reported that 38 percent of the U.S. population over 65 had some major activity limitation due to chronic conditions while 43 percent had at least some activity limitation.[2]

This declining physical ability, together with forced retirement and death of spouse and close friends, may contribute to a sense of worthlessness. The lack of meaningful social roles, or social isolation, may be a serious problem among the elderly.[3] In a 1973 survey of the elderly in Durham done by the Center for the Study of Aging and Human Development at Duke, an estimated 26 percent were lacking in some important amount or quality of social relationships.[4]

The chronic conditions of many elderly make them heavily dependent upon friends or relatives in carrying out the routine activities of daily living such as meal preparation, shopping and personal care. But if significant proportions of the elderly lack adequate social resources to help them cope with serious handicaps, institutionalization may be the only alternative. Even for those individuals with satisfactory social support, the enormous burden they place on their families may also hasten institutionalization.

institutional care

The combined effects of a rapidly increasing elderly population and a rising incidence of disabling illnesses have contributed to the growth of long term care institutions in this country. The number of skilled nursing and intermediate care facilities in North Carolina has risen rapidly since the passage of Medicare and Medicaid. In the decade 1966-75, the

---

Lynne Eickholt Cooper is a second-year student concentrating in socio-economic development in the Department of City and Regional Planning at the University of North Carolina, Chapel Hill. This past summer she was employed with the Office of State Planning in Raleigh, where she worked on a project dealing with state-wide human resources planning, evaluation and policy analysis.

number of beds in these institutions in North Carolina have tripled as Table I shows.

Table 1
Nursing Beds in North Carolina
1966-1975

Year	Nursing home beds (skilled and intermediate care facilities)
1966-67	4,842
1968-69	5,250
1970-71	7,868
1972-73	9,050
1974-75	12,065

In order to receive Federal reimbursement all institutions must meet certain physical plant and service standards. A skilled nursing facility must have twenty-four hour registered or licensed nursing coverage while intermediate care facilities require a registered nurse only eight hours a day. State licensing law requires only two attendants on duty around the clock for rest homes.[6]

home health care

Home health services refers to those items and services furnished to an individual in his or her home by a home health agency. They are:

(1) part-time or intermittent nursing care provided by or under the supervision of a registered nurse.

(2) physical, occupational or speech therapy.

(3) medical, social services, home health aid services, and other therapeutic services.

(4) medical supplies, other than drug and biologicals, and the use of medical appliances.

(5) any of the foregoing items and services which are provided on an outpatient basis under arrangements made by the home health agency at a hospital or nursing home facility or rehabilitation center and the furnishing of which involves the use of equipment of such a nature that the items and services cannot readily be made available to the individual in his home.[7]

By law the home health agency must provide skilled nursing service and at least one other therapeutic service; services must be carried out according to a plan developed by a physician who reviews it at least once every two months. If these and other administrative requirements are met home health services may be reimbursed through Medicare and Medicaid and a limited number of private insurors.

North Carolina has 64 home health agencies of which 45 are operated by county health departments. The remaining 19 are private non-profit, proprietary or hospital-based agencies. Twenty counties in the state have no provision for home health services. Most home health visits are nursing visits, with home health aide visits and physical therapy being the next two most frequent services received. Occupational and speech therapy and medical social work services are rarely available. This past fiscal year 11,000 individuals or one-fourth of one percent of North Carolina's population received home health services. These figures include the total population who receive home health services, not just those persons over 65.

geriatric day care

Day care centers for adults provide services during week days for elderly and disabled persons in a neighborhood facility. The exact content of these services is not as well specified as home health or institutional care, probably because there is no one important source of federal funding for such services such as Medicare or Medicaid. The types of day care services delivered span the health spectrum from primarily medical care to social programs emphasizing peer group interaction. The British, who have made use of the day care concept long before the United States, developed their centers as day hospitals while the twenty centers in North Carolina have developed as social programs. Most North Carolina centers were initiated by local residents as public non-profit centers and are located in the basements of churches or in community recreational facilities. The majority of these programs receive some local funds, seed money from the Older Americans Act,[8] or resources from Title XX of the Social Security Act which provides money for state social services. In order to be certified to receive federal, state or county funds each center must:

- provide two meals for clients who stay 10 hours
- follow rules governing disbursement of drugs
- have a plan for emergency first aid
- assist participants with personal care needs such as eating or going up and down stairs.[9]

Programs and activities are not specified except that each facility "should provide for social, physical, emotional, intellectual and cultural activities which will stimulate feelings of accomplishment and well-being." The ratio of participants to staff should not exceed eight-to-one.

the substitutability of alternative forms of care

The discussion of alternative forms of care has proceeded on the assumption that some institutionalized elderly could be maintained in the community. Is it actually possible to help individuals remain in the community who would normally be placed in intermediate care of skilled nursing facilities? How many elderly who are presently institutionalized could be supported by the community? Two studies have attempted to provide answers to these difficult questions, one in the state of

Massachusetts and another in a six-county area of New York.

In 1970, the Massachusett's Department of Public Health carried out disability evaluations of patients in nursing homes and discovered that only 37 percent of the residents required full-time, skilled nursing care. Fourteen percent required no care, 26 percent needed minimal supervision and 23 percent needed limited or periodic nursing care.[10] In the New York study the nursing care needs and physical and mental functional conditions of a sample of nursing home patients were determined. Twenty-seven percent of the sample could have used a lower level of care than that provided.

A higher proportion of widowed patients and those residing in urban as opposed to rural areas were inappropriately placed in institutions. The authors concluded the amount of social support from spouses or from rural families who have a stronger "care for your own" ethic was very important in determining whether an elderly person would be institutionalized.[11]

The discrepancy is probably due to different criteria used to determine what constitutes a necessary placement. There is no absolute standard for appropriate placement in a nursing facility, but it is significant the two studies agree that substantial proportions of the elderly could function without nursing home care.

Life in the community is much prefered to life in an institution.

Photo by Daniel Fleishman

constraints on state policy options

Any change in the present system of health care delivery for the elderly would encounter legal, administratve and political obstacles. It is important to recognize the strength of these obstacles and how they might be effectively dealt with before any such change is planned.

legal constraints

The largest single barrier to free development of alternatives is the legal restriction on federal reimbursement for health care. While the Older Americans Act and Title XX of the Social Security Act stress the prevention of unnecessary institutionalization and the promotion of independence, the major sources of funds for health care for the elderly—Medicare and Medicaid—actually *encourage* institutionalization by strict standards for reimbursement. Medicare, Part A, will provide reimbursement for home health services only if the individual is hospitalized for three days prior to initiation of services and allows for only 100 visits per episode of illness. Part B of Medicare does not require prior hospitalization but pays for only 100 visits during the calendar year. The elderly person must be homebound, sick, in need of at least intermittent skilled nursing care and have an individual at home who is willing and able to learn how to take over their care. The deficiencies of this approach are many. The service is obviously targeted toward the elderly person who has suffered an acute episodic illness and is considered a short-term extension of acute hospital care rather than a long term alternative to institutionalization. Only 43

. . . the major source of funds for health care for the elderly—Medicare and Medicaid—actually *encourage* institutionalization by strict standards for reimbursement.

percent of the 11,000 people using this service in North Carolina were carried on the caseload over three months in fiscal year 1975. The average number of visits per person was 21.2. The policy that at least one family member should be willing to take over the patient's care ignores the fact that many old people are at risk of institutionalization *because* they live alone or do not have the social supports necessary to maintain themselves in the community.

Medicare reimbursement is not available for geriatric day care. The first legal barrier is that the state has no licensing law for geriatric day care centers and such a law is necessary for a service to even be considered for Medicaid/Medicare certification. Secondly, day care in this state is primarily a social activity service and a medical component must be worked into a licensing law for Medicare certification.

administrative constraints

The traditional belief that physical well-being of the elderly means freedom from disease and handicaps rather than the ability to perform activities of daily living causes a fragmentation of services offered to the elderly both at the state and local level. The Home Health Branch of the Division of Public Health Services works with local public health departments to offer primarily nursing service while the Division of Social Services works with local social service departments to offer a homemaker/chore service and social work assistance to the elderly. The Social Services Division did not allocate any of its Title XX funds for adult social services to the Home Health Branch of the Division of Public Health Services. In an interview the Director of the Home Health Branch clearly saw the social service homemaker program as separate from home health. This dichotomy is a barrier to a comprehensive home health service that would function as a true alternative to institutionalization. Help at home - not 'maid service' but enough trained and supervised outside help to insure stability of the home as a substitute for an institution is critical for many patients. The home health aide-homemaker-housekeeper trichotomy is a deterrant to organizing care for the sick at home.[12]

political constraints

Behind the restrictive clauses of Medicare legislation lies the effective political power of the American Medical Association. The medical profession and its members are extremely jealous of their authority over the organization of medical care systems and their supervision over patient care. The Home Health Branch believes that home health services are underutilized partially because doctors do not refer people to it. Some physicians see home health and day care as a threat to their authority over patient care. Many physicians see the institution as the most convenient and only legitimate place for patient care. Slowly, some of the progressive federal and state legislation is passing over AMA opposition; however, the medical profession will continue to be a strong force in the shaping of alternative health care modes.

benefits of institutional care

In most studies of institutions the outcomes are treated as negative effects and certainly not as benefits. Our national policy with regard to the elderly reflects this research bias: institutionalization is to be avoided. This dark view of the effects of institutionalization is not unjustified. There is an *a priori* value that could be attached to remaining in the community; institutional life represents the ultimate segregation from the community and dependency.

In an article on the institutional environment Eisdorfer and Bennett describe how it fosters dependency.

> Dependency...is fostered by both the psychological climate and spatial arrangements. Old people seem to be rendered helpless in settings where there are many stairs to climb and corridors which are not differentiated from one another by signs or colors. In the name of operational efficiency...those programs for the most helpless and dependent are often promoted widely within an institution (e.g. bedrest) and these operate to promote increased dependence justifying the support system. Efficiency becomes a basis for reduction in alternatives which would require the exercise of judgment or choice by the individual...[13]

Another psycho-social quality of institutions is lack of variety in social roles. Passive roles observed include complaining, social withdrawal and sitting and watching.[14] The institutional atmosphere is not conducive to improvements in well-being.

There have been a multitude of studies measuring the specific negative effects of institutional life. Most of these studies, however, compare traits of the institutionalized groups to a control group living in the community. Lieberman, a University of Chicago psychiatrist who has done much of the American research on institutionalization, rightly contends that much of the negative conclusions of researchers are influenced by the characteristics of the elderly person prior to institutionalization or are associated with aspects of entering the institution. In order to overcome this bias, Lieberman compared a group of institutionalized individuals to a matched sample on a waiting list for the same institution and to a group of community controls. When he compared the institutional group to those on the waiting list he discovered that the latter had less impairment of cognitive functioning and were better off in terms of anxiety, anomie and interpersonal relations.[15] The institutional group was less emotionally responsive than the waiting list group.

Our society does view the long-term care institution as a place for the very sick, deviant, or helpless . . . it is not difficult to understand the feelings of fear and hopelessness associated with entering an institution.

As a result of his study Leiberman concluded that the negative outcomes associated with institutional life were more likely a result of the decline in ability precipitating institutionalization and the crisis reaction to the knowledge of institutionalization. This hypothesis is intuitively appealing. Our society does view the long-term care institution as a place for the very sick, deviant, or helpless and it is not difficult to understand the feelings of fear and hopelessness associated with entering an institu-

tion. Even if dread of institutionalization rather than the institutional life is the cause of the problem, Lieberman's reported improvements may be no more than an amelioration of the initial damage to the elderly individual that would never have occured had institutionalization not been prescribed.

benefits of home health care

For the past five years home health care has been vigorously espoused as an alternative to institutionalization. The elderly could be helped in a more familiar and therapeutic environment thereby increasing the likelihood of maintaining independence. Despite the fact that such proposals have progressed as far as senate subcommittees there has been no adequate evaluation of the benefits of home health. The one experimental study of a home health service discovered by this author was inadequate from which to generalize because the population studied was a privileged group of elderly from the Benjamin Rose Geriatric rehabilitation hospital.[16] Even with a select sample, the study's results were not completely encouraging. A group of 100 patients discharged from the hospital were randomly allocated to an experimental group who received help in home tasks and personal care and a control group who received no service. The three dependent variables measured were survival, contentment and number of days in long-term institutions. The only significant difference was fewer days of long-term care and this difference only appeared when the elderly patient had a care giver living with him in the household.

benefits of geriatric day care

The British began experimenting with geriatric day care almost twenty years ago. One of the first experiments was conducted at a geriatric hospital in Sunderland England.[17] A geriatric day center was established in an unused ward of the hospital and staffed with a full-time occupational therapist and secretary. The center also used the part-time services of a doctor, physiotherapist and social worker. Former patients of the geriatric center who were known to be living alone were allocated to a treatment group who attended the day hospital and to a control group. Both groups were pre-tested on their amount of sleep, degree of agitation, personal cleanliness, depression and self-impression of health. At the end of the six months the group attending the day center experienced a significant reduction over the control in the number of days in the hospital as well as a significant reduction in depression.

In 1972 the Federal Administration on Aging funded a day care center demonstration project at the Levindale Geriatric Research Center in Baltimore in which the effects of day care were compared to the effects of institutional life. A summary of the final report was presented at a gerontological convention in October, 1975.[18] The details of the methodology have not been published but the Levindale group concluded that the functional health state of the day care participants—in terms of their mental health and ability to perform the activities of daily living-was significantly improved over the institutional group. Although the families of participants were not formally studied, many indicated that they were relieved from the strain of caring for the elderly individual. The day care group included 35 elderly persons who were functioning at a low level—many of whom had experienced the death of a close family member and loss of meaningful social contacts. The program participants received the services of a registered nurse, nurse's aid and part-time social worker. The medical component of the center qualified it to receive Medicaid reimbursement.

measuring costs

Examining the cost of the three health care alternatives, the total *social cost*—federal, state and local expenditures, as well as individual expenditures for meals, housing and medical supplies necessary to support the older person in his or her home—must be taken into account.

costs of institutional care

The total capital and operating costs of a typical long-term care facility are shown in Table 2.

Table 2

Average Capital and Operating Costs of a Combination Skilled and Intermediate Care Facility in North Carolina[19]

	Capital Costs		Annual Operating Costs
Building and fixed Equipment	$800,000	Insurance	$ 5,100
Movable Equipment	125,000	Taxes	19,000
Site Acquisition @ 5 acres	75,000	Administration	64,125
Site Preparation	50,000	Building and Grounds	11,550
Engineering and Architect's fee	85,000	Dietary	115,125
Other	70,000	Housekeeping	28,500
		Nursing	331,125
TOTALS	$1,205,000		$574,525

To facilitate comparison of alternative program costs it is useful to transform the total costs above to an annual per person charge. These estimated costs are shown in table 3 below.

Table 3

Annual Per Person Costs of Institutionalization[20]

	10%	5%
Capital cost per resident per year	$1,175	$ 694
Operating costs per resident per year	5,320	5,320
TOTAL costs per resident per year	$6,495	$6,014

costs of geriatric day care

Figures for the capital and operating costs for four of the twenty centers in North Carolina were available through the Adult Services Section of the State Division of Social Services. While the data have some severe limitations they are presented as the best approximation of the cost of a day care program.[21] The average capital and operating costs of a day care center are shown in Table 4. The calculated annual charges are shown in Table 5.

Table 4

Average Capital and Operating Costs for Geriatric Day Care Centers in North Carolina

Capital Costs		Annual Operating Costs	
Renovation and Repairs	$2250	Salaries & benefits	$25,649
Movable Equipment (program and administrative	$4557	Rent, Utilities & maintenance	5,316
		Client transportation	6,641
		Supplies	2,573
		Food	6,205
		Other	1,798
TOTALS	$6807		$48,182

Table 5

Annual Per Person Program Costs of Geriatric Day Care[22]

	10%	15%
Capital cost per client per year	$ 32	$ 23
Operating costs per client per year	1784	1785
TOTAL costs per client per year	$1816	$1808

These data show that in terms of annual per person program costs maintaining an elderly person in a long-term care institution is three times as costly as a typical day care program would be. Enumeration of the program costs alone underestimates the true *social cost* of the day care alternative. The individual lives at home two thirds of the time and either he or his family incur additional support costs. The costs of medical care, personal care, food and housing should ideally be included in the analysis.

The costs of food and housing for the elderly were estimated in a study of services to non-institutionalized elderly prepared by the School of Public Affairs at the University of Minnesota.[23] The figures are calculated separately for those elderly living alone and those living with another person.

With these figures added to the operating costs per client the revised total costs are shown in Table 7.

Table 6

Estimated Per Person Housing and Food Costs[24]

	Annual Food Cost Per Person	Annual Housing Cost Per Person
Living Alone	$420	$1500
Living With Someone	420	870

Table 7

Estimated Annual Per Person Costs of Day Care in North Caroilna with Housing & Food Costs Added

TOTAL costs per client per year	10%	5%
Living alone	$3736	$3727
Living with someone	3106	3097

When an approximation to total social cost is used geriatric day care still results in significant cost savings over institutional care in North Carolina. Discounted at a rate of ten percent geriatric day care for an individual living alone is only 58 percent the cost of institutionalized care; at the five percent discount rate day care is 62 percent the cost of institutionalized care.

costs of home health care

Data on home health in North Carolina were obtained from a survey of county agencies conducted by the State Home Health Branch. The results of this survey show a wide range of per-visit costs across the state by category of home health worker.

Table 8

Costs Per Visit
Home Health Agencies

	Range	Average Cost
R.N. and L.P.N.	$ 9.55 - 29.30	$16
Health aide	4.10 - 28.00	10
Physical Therapy	10.17 - 41.48	not available
Male orderly	7.00 - 17.50	not available

The per visit costs are determined by a formula used by Medicare and Medicaid to calculate allowable reimbursement.

A problem in computing annual per person charges for home health care is the difficulty in determining the necessary number of visits. The present state average of 21 visits per person per year is considered insufficient to adequately support the elderly at the risk of institutionalization, so costs are computed for three levels of care: 1) one visit every two weeks, 2) two visits per week and 3) three visits per week.

Using the average per visit costs for nursing health aide care, the annual per person cost of home health is calculated below.

Table 9

Annual Per Person Program
Cost of Home Health Care

	R.N.	Health Aide
1 visit/ 2 weeks	$ 416	$ 260
2 visits/ week	1664	1040
3 visits/ week	2496	1560

With the housing cost used in estimating the costs of geriatric day care and with an annual per person food cost of $629.52 for elderly living alone or with another person, the total social cost of home health can be approximated.

Table 10

Annual Per Person Cost of Home
Health Care for Those Living Alone

	R.N.	Health Aide
1 visit/ 2 weeks	$2546	$2390
2 visits/ week	3794	3170
3 visits/ week	4626	3690

Table 11

Annual Per Person Cost of Home
Health Care for Those Living With Another Person

	R.N.	Health Aide
1 visit/ 2 weeks	$1916	$1760
2 visits/ week	3164	2540
3 visits/ week	3996	3060

The analysis of the costs of home health is somewhat artificial because most elderly would receive a combination of professional and para-professional services. It is intended to show that there is a continuum of costs for serving the elderly person at home depending on the person's disability level, personal care needs and living situation. It is likely that the elderly person living alone would be more expensive to maintain in a home health program; they have higher housing costs and would probably require frequent visits by aides or professional help. If they required frequent help from professionally qualified personnel it would probably be cheaper to maintain the individual in a day care center. Even if older persons living alone required only frequent personal care assistance from aides it would be at least as cheap to place them in day centers. Unless the elderly require continuous professional supervision at home, a home health program has a significant cost advantage over institutional care.

conclusion

Although the great majority of long-term facilities in North Carolina are proprietary, the state must approve plans for the construction of such skilled nursing and intermediate care facilities. Because the federal government is heavily involved in state medical expenditures, it has a large stake in assuring that all facilities constructed are necessary. In order to receive funds for patient reimbursement through Medicare and Medicaid or funds for medical facilities construction the state must project the need for facilities and permit only the amount of construction necessary to fill the projected needs.

In the next five years the State Division of Facility Services has projected an increase of 5,087 in the institutional population and will allow construction for 5,652 skilled nursing and intermediate care beds, or 47 new institutions. Assuming that the figures in the New York study of unnecessary institutionalization can be applied to this state, then 1,526 of the projected institutional population or approximately 30 percent, could be maintained in the community.

Even if the 1,526 older people lived alone $4,209,760 per year in total resource costs could be saved by maintaining these individuals in a geriatric day care program in the community. In addition, the state would save a significant amount in Medicaid reimbursements. The home health alternative represents a substantial savings over the institution but may be more expensive than the day program, especially if the elderly require frequent visits by professional personnel. There is also much uncertainty about the potential benefits of home health. The fragmentation of basic home health services and the restrictions on reimbursement make program adaptation and expansion difficult. The day care alternative, on the other hand, is organized under one agency of state government. At present federal funds for day care reimbursement are not available, but the hurdle is not impossible to overcome. The State of Maryland has enacted a day care licensing law and the Levindale Adult Day Center in Baltimore is eligible for Medicaid benefits. The Division of Social Services should strongly promote the enactment of a day care licensing law including a medical care component in the next session of the General Assembly.

North Carolina is currently pursuing the policy of many states — building an increasing number of long term care facilities at spiraling costs. If the state increased appropriations for day care centers and reduced the amount of allowable long term facility construction, savings could be significant-both to the state and individual residents. More importantly, the elderly could avoid the hopeless prospect of years in an institution and cope more successfully with the problems of old age in the community.

Footnotes

[1]William B. Clifford and Gary Faulkner, *North Carolina's Elderly Population: A Distributional Analysis.*

[2]*Vital Statistics of the United States,* U.S. Public Health Service, 1972.

[3]Ethel Shanas, et al., *Old People in Three Industrial Societies,* (New York: Atherton Press, 1968); *Working with Older People,* Volume II, U.S. Department of HEW, Public Health Service, 1969-1971. These are two of a series of references to the concept of social isolation that may be found in the literature.

[4]Older Americans Resources and Services Community Survey, Durham, North Carolina, 1973.

[5]North Carolina State Plans for Hospitals and Long-Term Facilities, 1966-1975.

[6]*Rules and Regulations for the Licensing of Nursing Homes,* (North Carolina: Department of Human Resources, Division of Facility Services, 1972).

[7]*Rules and Regulations for the Licensing of Home Health Agencies,* (North Carolina: Department of Human Resources, Division of Facility Services, 1971).

[8]Public Law 89-73, July 14, 1965, "The Older Americans Act of 1965," as amended May 3, 1973.

[9]*Day Activity for Adults, Standards for Certification,* (North Carolina: Department of Human Resources, 1974).

[10]Levenson Gerontological Policy Institute, *Alternatives to Nursing Home Care; A Proposal,* Prepared for use by the Senate Special Committee on Aging, (Washington, D.C.: U.S. Government Printing Office, 1971) p. 13.

[11]J.W. Davis and M.J. Giffors, "An Areawide Examination of Nursing Home Use, Misuse and Non-use," *American Journal of Public Health,* 61 (1971), pp. 1146-1155.

[12]F. Van Dyke, et al., "Organized Home Care: An Alternative to Institutions," *Inquiry,* 9 (June, 1972) p. 13.

[13]Carl Eisdorfer and Ruth Bennett, "The Institutional Environment" in *Issues in Long Term Care,* Sylvia Sherwood (ed.) (New York: Spectrum, 1975) p. 418.

[14]*Ibid.*, p. 418-419.

[15]M. Lieberman, et al., "Psychological Effects of Institutionalization" Journal of Gerontology, 23 (1968) pp. 343-353.

[16]Margaret Nielson, et al., "Older Persons After Hospitalization: A Controlled Study of Home Aide Service," *American Journal of Public Health,* 62 (August, 1972).

[17]E. Woodford-Williams, et al., "The Day Hospital in the Community Care of the Elderly," *Gerontologica Clinica,* 4 (1962) p. 241.

[18]*Cost Effectiveness Evaluation of the Levendale Adult Day Treatment Center,* Executive Summary (Baltimore: Levindale Geriatric Research Center, 1975).

[19]The cost breakdowns were obtained from a private firm that has built almost a dozen facilities in North Carolina. The figures are for a 120-bed facility operating at 90 percent occupancy which contains 80 percent intermediate care beds and 20 percent skilled nursing beds.

[20]This was done by converting the capital costs to an annual per person annuity paid over the life of the project and then adding the annual per person operating costs to obtain the total annual charge. Following a previous cost analysis of nursing homes, 40 years was

chosen as the life of the building and 15 years for the movable equipment. Although the life of land is theoretically perpetuity it is treated as 40 years here on the assumption that the value after 40 years is negligible at most discount rates. The correct rate of interest, assuming no market imperfections, can be found by determining from what sectors the funds for nursing homes are drawn and then measuring the opportunity costs of using the capital in those sectors. Because it is difficult to determine the sectors from which nursing home funds are drawn and the assumption of market perfection is a poor one, the interest rate is treated as a policy variable and a sensitivity analysis is performed using five percent and ten percent rates.

[21]The cost figures are projections for this fiscal year and are only rough estimates. Second, no centers are housed in new buildings. If North Carolina were to expend funds for day centers it is possible that future programs may incur the capital cost of building construction. However, no cost estimates for such construction are available and it is assumed that new centers will continue to pay rental for the use of existing space. Third, because the day centers are so new and are generally dependent on the small amount of public funds available for client reimbursement, staffing is minimal. If centers were staffed like the Levindale program, for instance, operating costs might be increased. Finally, there is wide divergence in the per-person costs for the four centers, making the average cost a less valid figure. However, the average is used in this analysis as only a first approximation of the cost of a day center program.

[22]The same reasoning used to convert institutional costs to per person annual charges can be used for the day centers. The average number of participants for the four centers is 27. The life of the movable equipment is again assumed to be 15 years. For the purposes of this analysis it is assumed that the renovated buildings have one half the life of newly constructed institutions or 20 years.

[23]Nancy N. Anderson, principal investigator, *A Planning Study of Services to Non-Institutionalized Older Persons in Minnesota*, (Minnesota: The Governor's Citizens Council on Aging, 1974).

[24]The yearly food cost was divided by two-thirds because day centers usually provide one meal and several snacks.

areawide water quality: the 208 planning experience

Of the many changes brought about by passage of the amendments to the Water Pollution Control Act of 1972 (Public Law 92-500), the one having the greatest potential impact on urban planning is Section 208. This Section calls for areawide water quality management in all regions exhibiting complex water quality problems caused by urban and industrial concentrations. Provisions of Section 208 afford opportunities to achieve economies of scale and consistency of management plans among the several political jurisdictions in metropolitan areas; they broaden the scope of water pollution control to embrace urban storm water runoff and nonpoint sources of pollution from agriculture, forestry, construction, and other activities; and they significantly expand the range of management techniques to include regulatory programs at the areawide level and, if necessary, land use controls.

The purpose of this paper is to describe the basin-level planning environment within which areawide planning takes place, the current status of the program, and the planning process as it was developed for the Research Triangle of North Carolina, the first area in the United States designated and funded under the present legislation.

the basin planning environment

Areawide planning as recorded in Section 208 is but one of three scales in the comprehensive water quality planning strategy set forth in PL 92-500. Planning at the largest scale is conducted on a river basin level. This planning process, conducted by the states, consists of developing water quality management plans for each river basin and its major sub-basins as prescribed in Section 303(c). These basin plans have two purposes: (1) to determine appropriate levels and schedules for construction of water treatment facilities for all municipal and industrial sources where water quality standards can be satisfied in a relatively simple manner, and (2) to determine those stream segments and sources of pollution where the standards cannot be satisfied in a cost-effective manner by the simple application of treatment technologies to individual dischargers. It is in the latter areas that either the states or local governments, acting through a regional organization, must initiate planning at the second level — areawide planning as defined by Section 208. When the latter plans have been developed and adopted by the local, state, and federal governments, they become part of the basin plan.

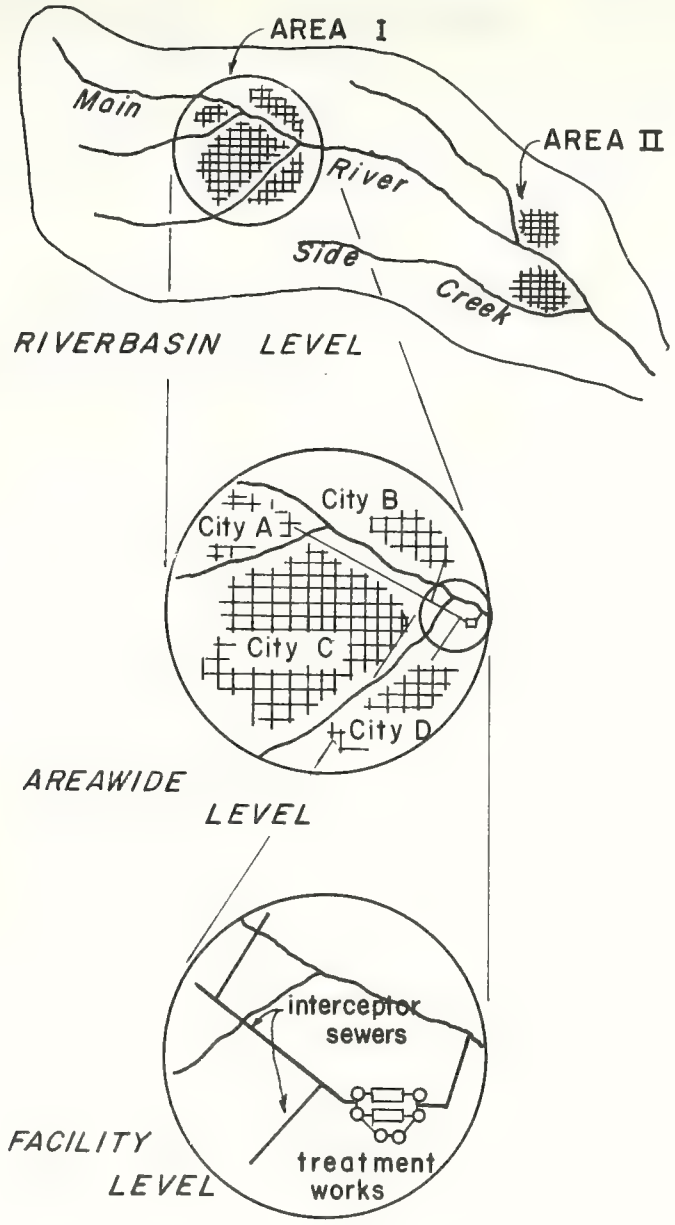
The third level of this process, waste treatment facilities planning, consists of detailed engineering surveys, analyses, and design of publicly-owned waste treatment facilities. These facilities are the structural components of either basin or areawide plans, and are eligible for 75 percent federal construction grants provided in Section 201 of the legislation.

Although the three level water quality and related water resource planning strategy implies an orderly sequence . . . the actual environment within which areawide planning operates is complicated by difficulties of scheduling and funding of those interrelated activities.

In addition to the above three-level strategy, Congress recognizes the need to integrate this single-purpose water quality process with the broader water resource concerns of the U.S. Water Resources Council, the agency charged with implementing the Water Resources Planning Act of 1965 (PL 89-90). In Section 209 of PL 92-500, Congress directed the Council to assign priority to the development of comprehensive water resource plans in those basins where areawide quality management was found to be necessary.

Although the three-level water quality and related water resource planning strategy implies an orderly sequence from the broadest level down to facilities planning, the actual environment within which areawide planning operates is complicated by difficulties of scheduling

David Moreau is an Associate Professor of Environmental Systems Analysis and Planning in the Department of City and Regional Planning at the University of North Carolina. He developed the work program for areawide water quality planning in the Research Triangle area of North Carolina and has consulted with the U.S. Environmental Protection Agency for the development of planning guidelines for areawide water quality planning.



THE LEVELS OF WATER QUALITY PLANS

Figure by David Moreau

and funding of those interrelated activities. In many cases, construction of major water quality management facilities was begun prior to the initiation of areawide planning. Another problem is that basin-level water quality plans in many areas are being developed simultaneously with 208 plans; and, in most instances, comprehensive water resource plans will follow, not lead, development of areawide water quality plans. The existence of any of these difficulties necessitates adaptation of the 208 planning process to local conditions, either by foreclosing some of options or by expanding the range of alternatives to cover uncertainties about major water quality related developments.

status

As of July 1, 1975, 149 areas in the U.S. had been designated for areawide planning and $163 million had been granted in support of the 208 program. If it had not been for delays by the Environmental Protection Agency (EPA) in implementing Section 208 and ambiguities about its applicability and level of detail in areas not explicitly designated for such planning, more areas might have been designated and funded. However, a recent court decision has made it clear that detailed plans, prepared either by designated areawide planning agencies or by the state, will be required for *all* regions exhibiting complex water quality problems. Under regulations soon to be published by EPA, state planning agencies will be given a stronger role in the 208 program, and will be eligible to receive grants to carry out these activities.

scope

The functional scope for areawide planning has not been tightly defined by EPA. A considerable amount of judgment must be exercised in setting an agenda for each of the regions in which it is initiated. Minimum requirements specified in the Act include: (a) the formulation of plans for the collection, treatment, and disposal of municipal and industrial wastes and urban stormwater runoff; (b) the estimation of pollution from agriculture, silviculture, mining, construction, and saltwater intrusion, and the formulation of control techniques to manage such pollution, including land use controls if necessary; (c) development of a regulatory program; and (d) formulation of a management system consisting of one or more agencies to implement the plan. Regulatory programs are to be granted powers to implement effluent limitations, regulate the location and modification of waste dischargers, and assure that industrial and commercial contributors to public facilities meet applicable pretreatment standards.

Beyond these formal minimum requirements, the scope is flexible within the limits of available planning resources. Common sense dictates that all significant interactions among water quality, other water resource, and land use projects and programs be made explicit. Eighty-eight of the designated 208 areas include counties that have also been designated as Air Quality Maintenance Areas under the federal air quality manage-

ment program. Because these activities, along with land use and transportation planning, involve many common data bases, analytical models, and multiple-purpose control measures, the sharing of resources and development of cohesive strategies among these programs should be mandatory.

the planning process and work at triangle j

A multiple objective planning process, emphasizing environmental quality and economic efficiency, is required of 208 planning in both the legislation and in guidelines prepared by EPA. Under the environmental quality objective, the principal criterion is satisfaction of applicable water quality standards. In addition, all proposed actions are to be evaluated with respect to those environmental impacts identified in regulations developed by the Council on Environmental Quality pursuant to the National Environmental Policy Act. Economic efficiency contributions are measured by direct resource costs of proposed facilities (capital, operation, and maintenance), land, and administrative costs of operating facilities, monitoring, and inspection. In addition, alternatives are to be evaluated with respect to their financial feasibility, relationships to other public projects, public health, and gross impacts on economic activity and employment. Public participation is required at the minimum level of public hearings and an advisory committee consisting of local elected officials and representatives of administrative agencies of state and federal agencies. More substantial public input is encouraged through aggressive one-way and two-way interactions among the planning staff, units of local government, organized interest groups, and the public at large.

In the Research Triangle particular emphasis is being placed on surveys of nonpoint sources of pollution, land use, and environmental resources — those elements for which existing data sets are most incomplete.

Details of how the process is organized, data gathered, and analytical techniques employed in support of the process will vary widely among the areas. As part of the first 208 grant, a pilot study was undertaken by this author[1] and his colleagues to develop an operational program of work for the Triangle J Council of Governments, the designated agency for areawide planning in the Research Triangle of North Carolina. That program, shown schematically in Figure 1, consists of four basic steps: (1) assessment of existing conditions; (2) formulation of water quality related areawide goals; (3) development of criteria for guiding the formulation and evaluation of alternatives; and (4) a two-stage process for generating and evaluating the alternatives.

Assessments of existing conditions involved surveys and analyses of (a) natural resource and environmental systems; (b) water-quality related activities, their land and water resource demands, rates of waste generation, and environmental impacts; and (c) water quality and related management systems — their legal, organizational, policy, and financial attributes. In the Research Triangle particular emphasis is being placed on surveys of nonpoint sources of pollution, land use, and environmental resources — those elements for which existing data sets are most incomplete. Nonpoint loads are being estimated through the use of automatically activated samplers, continuous flow recorders, and rainfall gauges located along streams in the study area. Impacts of these loads during and following rain storms are being measured by continuous instream monitors. Inventories of land use and environmental resources are being constructed with the aid of Earth Resources Satellite data aerial photographs, and local land use maps.

Assumptions as to location and intensity of economic activities and land uses are being developed through construction and evaluation of alternative scenarios of these activities. Outputs of this process will include: (1) estimates of the range of total waste loads and their spatial distributions that may be anticipated within the area over the planning horizon; and (2) identification of the levels to which development may

Urbanization creates unsightly and potentially dangerous pollution.

Courtesy of EPA/WRRI-UNC

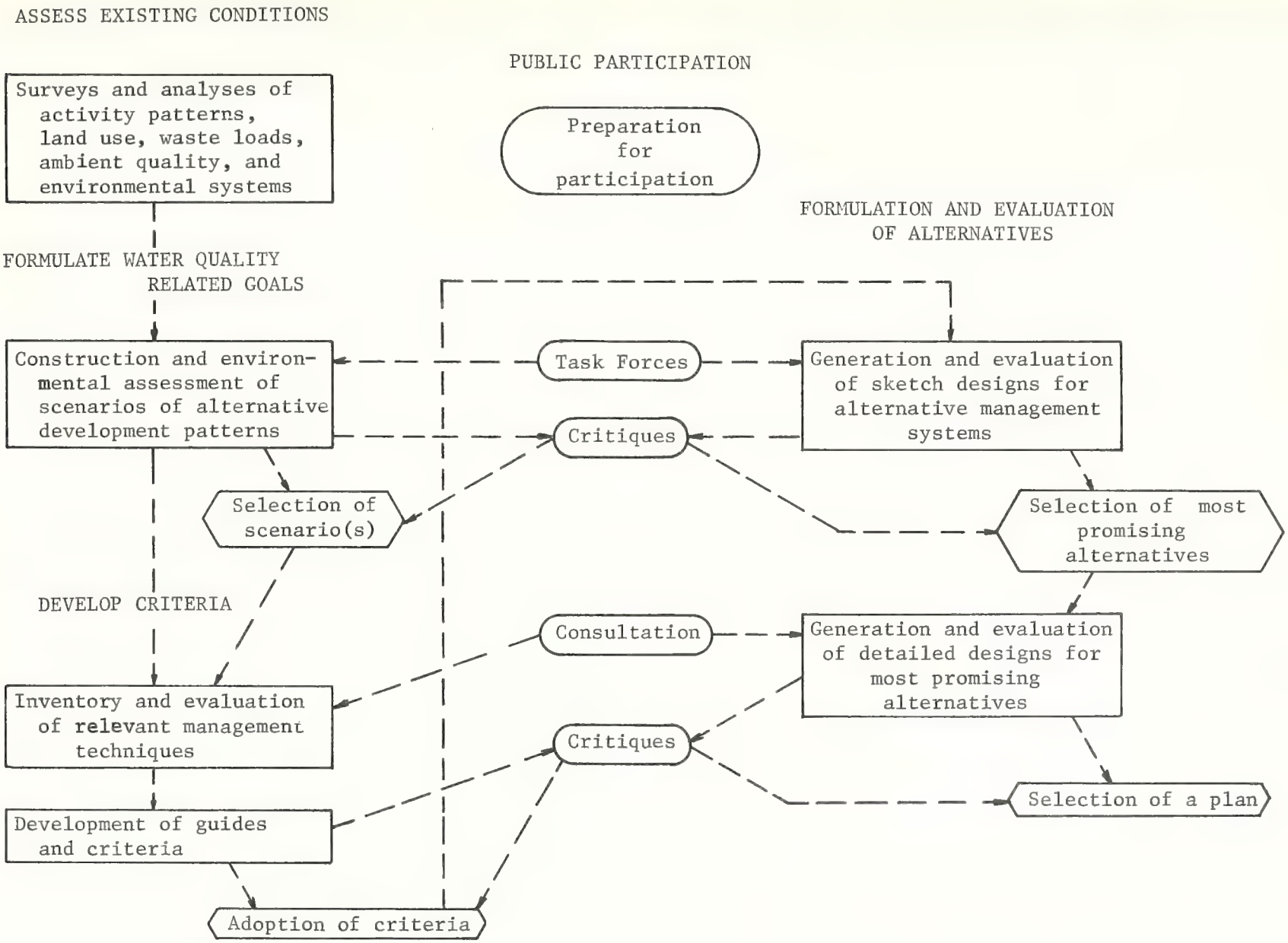

ASSESS EXISTING CONDITIONS
PUBLIC PARTICIPATION
Surveys and analyses of activity patterns, land use, waste loads, ambient quality, and environmental systems
Preparation for participation
FORMULATION AND EVALUATION OF ALTERNATIVES
FORMULATE WATER QUALITY RELATED GOALS
Construction and environmental assessment of scenarios of alternative development patterns
Task Forces
Generation and evaluation of sketch designs for alternative management systems
Critiques
Selection of scenario(s)
Selection of most promising alternatives
DEVELOP CRITERIA
Consultation
Generation and evaluation of detailed designs for most promising alternatives
Inventory and evaluation of relevant management techniques
Critiques
Selection of a plan
Development of guides and criteria
Adoption of criteria

FIGURE 1. DIAGRAM OF THE PLANNING PROCESS

occur in subareas without exceeding economic, technical, and environmentally sound limits. The scenarios are being constructed by developing areawide aggregates of population and related economic activities to reflect different mixes of employment opportunities, resource consumption levels, and rates of waste generation. These aggregates are then allocated over space using a simplified land use model. In the allocation process, locations of basic employment are determined exogenously; households are then allocated according to their proximity to employment and centers of residential development.

Alternative management strategies are to be developed with variations in three basic factors: (1) the level of centralization in policy-making and administrative systems; (2) the degree of reliance on non-treatment techniques such as recycling, land use, and pricing policies; and (3) structural systems for the collection, treatment, and disposal of wastes. An exhaustive examination of all alternatives that could be generated by selecting many levels for each of these factors would exceed available planning resources and yield excessive amounts of information. Therefore, a two-stage process to search for alternatives has been adopted. In the first stage, six or more strategies, representing three levels of centralization, two levels of reliance on non-treatment techniques, and one or more structural designs for each of the other combinations, will be developed and evaluated at a coarse level of detail. Levels of centralization will be: (1) a local alternative emphasizing individual community and industry responses; (2) clustering of dischargers about two or three centers of activity within the area; and (3) a strongly unified regional approach. Reliance on non-treatment techniques will be set at two levels, the existing level involving minimum compliance with applicable requirements, and a higher level probably including effluent density zoning, waste load allocation to sub-areas, aggressive programs to reduce waste loads, and a strong emphasis on recycling and reuse. Only the most promising of these alternatives or modifications to them, as indicated by the feedback from public participants, will be elaborated in the second stage.

Monitoring the waterways is an essential part of the study.

Courtesy of EPA/WRRI-UNC

In the present study, environmental consequences of proposed actions will be measured by the amount of resources lost or severely disrupted by proposed actions (or inaction).

Finally, evaluations of alternatives are to be made with respect to the objectives listed previously. There should be little difficulty in assessing direct economic efficiency costs. There are well-known difficulties in assessing economic efficiency benefits, but the Water Resources Council Standards[2] provide well developed guidelines for this task. Methods for assessing beneficial and adverse contributions of alternatives to the environmental quality objective are less well developed. Measures of whether water quality standards will be satisfied involve relatively straightforward water quality models, although there will no doubt be substantial questions as to the predictability of any model. Measurements of other environmental impacts will have to rely on the imperfections in the current state-of-the-art in preparing the statements required by the National Environmental Policy Act. Ortolano and Hill[3] and Hufschmidt[4] found that the more recent statements have shown improvements over those written shortly after the Act was passed in 1969, but there remains no systematic and generally accepted principal for measuring and displaying environmental impacts. In the present study, environmental consequences of proposed actions will be measured by the amount of resources lost or severely disrupted by proposed actions (or inaction). Summary statements will illustrate the uniqueness and relative scarcity of affected resources, as well as the timing, duration, and degree of permanence of environmental impacts.

Impacts on the general economy, employment, and health of the area will be assessed as particular issues arise in the formulation of management strategies. Impacts will also be assessed based on social equity considerations. Evaluation of the compatibility of the plan with other proposed water projects in the area will focus on the issue of eutrophication in two major multiple purpose reservoirs in the region.

comments

Expectations of the consequences of areawide planning in early rounds of activity under PL 92-500 must be tempered by several factors: (1) existing organizational arrangements for water quality management; (2) the inexperience of planners with nonpoint sources; (3) a reluctance of government at all levels to impose effective land use controls; (4) development of relationships between areawide and state-level water quality management; and (5) relationships between water quality and water resource management. Existing agencies for areawide planning consist predominantly of councils of governments and regional planning commissions with very limited powers of implementation and little experience in water quality planning. Only a few of the 149 designated agencies are water quality management agencies or governments of general jurisdiction. The capacity of non-water agencies to develop and foster the implementation of operational water plans remains uncertain. The search for cost-effective control measures for nonpoint sources is very much in its infancy. Further, the legal and political processes for establishing effective organizational arrangements among local, regional, and state governments for water quality and the broader aspects of water resource management must still be evolved.

Footnotes

[1]Moreau, D. H. *Field-Level Planning for Areawide Waste Treatment Management.* Research Monograph No. 21. Chapel Hill: Center for Urban and Regional Studies, University of North Carolina, 1975.

[2]U.S. Water Resources Council. "Water and Related Land Resources: Establishment of Principles and Standards for Planning," *Federal Register*, September 10, 1973, pp. 24775-869.

[3]Ortolano, L., and Hill, W. W. *An Analysis of Environmental Statements for Corps of Engineers Water Projects.* Institute for Water Resources, Report 72-3. Springfield, Va.: National Technical Information Service, 1972.

[4]Hufschmidt, M. M. *Environmental Statements and Water Resources Planning in North Carolina.* Report No. 94. Raleigh: Water Resources Research Institute of the University of North Carolina, 197